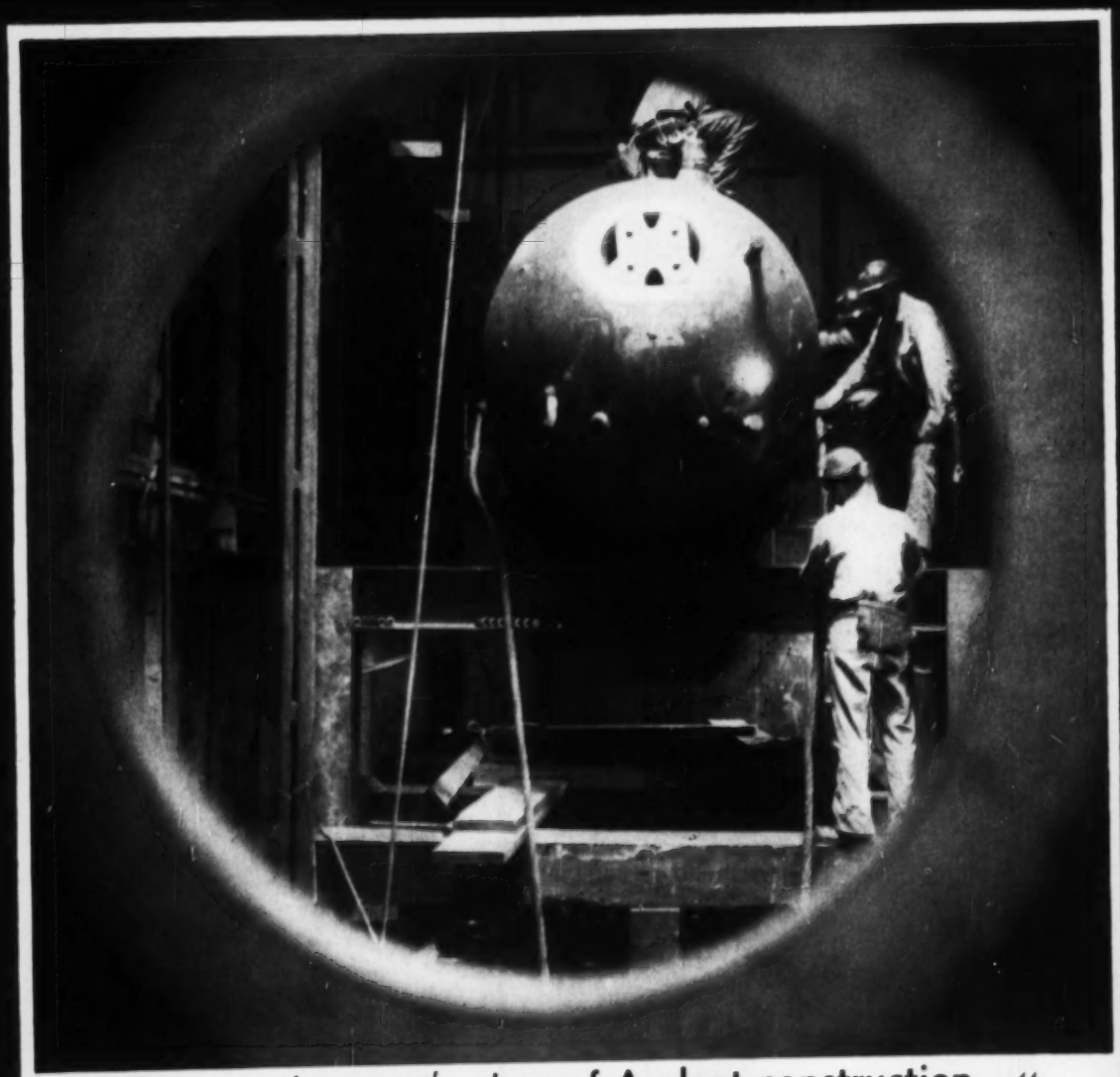
ENGINEERING NEWS-RECORD



Construction man's view of A-plant construction p. 44

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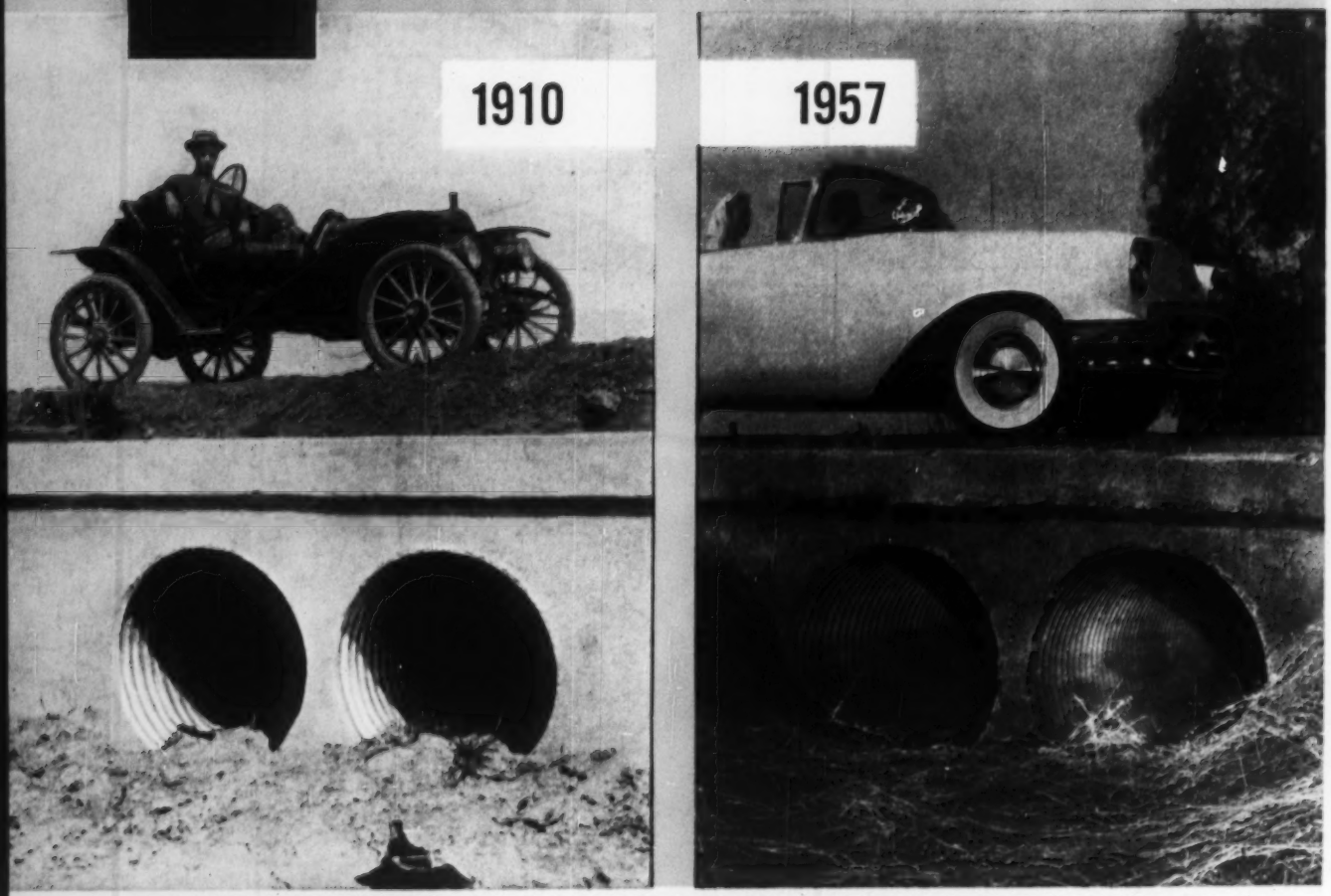
47 Years' service proves design, durability of Armco Pipe



THESE PHOTOS, TAKEN 47 YEARS APART, show the same Armco Corrugated Metal Pipes installed on Cherokee Lane Road near Stockton, California. The pipe is still in fine condition and should last many more years.

Armco Drainage Structures have been installed on thousands of highways—from simple dirt roads at the turn of the century to the high-speed expressways of today. And the basic principles of Armco Corrugated Metal Pipe—lightweight, strength plus flexibility, and durability—have required no change.

Here is visual proof of the material and structural durability of Armco Pipe. These Armco Pipes were installed in 1910 and are still in top-notch condition.

Today, Armco Drainage Structures are available with a variety of coatings and pavements that help you meet the degree of corrosion or erosion resistance required. Wide range of sizes and gages.

You'll find an Armco Sales Engineer in phoning distance. Call him about drainage and construction products for highway, railway, industrial or municipal requirements. Or write us for data. Armco Drainage & Metal Products, Inc., 3827 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

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- **ONE-PIECE STEERING CLUTCH AND FINAL DRIVE HOUSING . . . insures perfect alignment, low maintenance, long life**
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- **ALL-STEEL BOX-A MAIN FRAME . . . provides full-length protection**

All pioneered and proved by Allis-Chalmers . . . five of dozens of basic advantages that can help you bid lower . . . get more jobs . . . make a profit when you're through. Now is the time to have them working for you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

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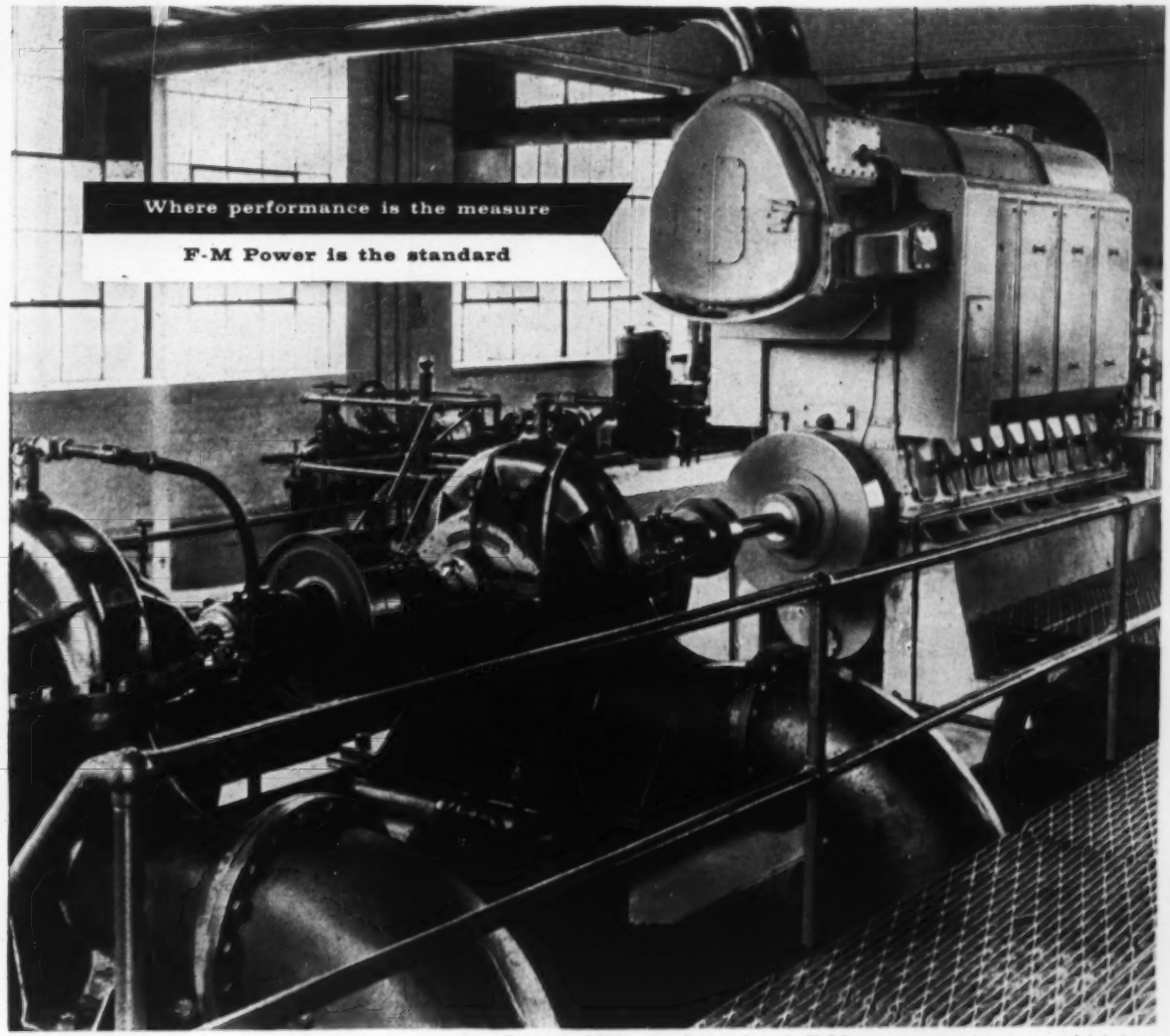

Latest addition to Greensboro's F-M power-pumping team which includes two 14", three 20" and one 16" single-stage, double-suction, centrifugal pumps. All are driven by O-P diesels totaling 3175 hp.

Greensboro Saves $46,300 Yearly with Fairbanks-Morse Power-Pumping Team

Increased capacity at operating costs that are lower by 55%—that is the record set by 3100 hp. of Opposed-Piston diesels and the six F-M pumps they drive in the water system of Greensboro.

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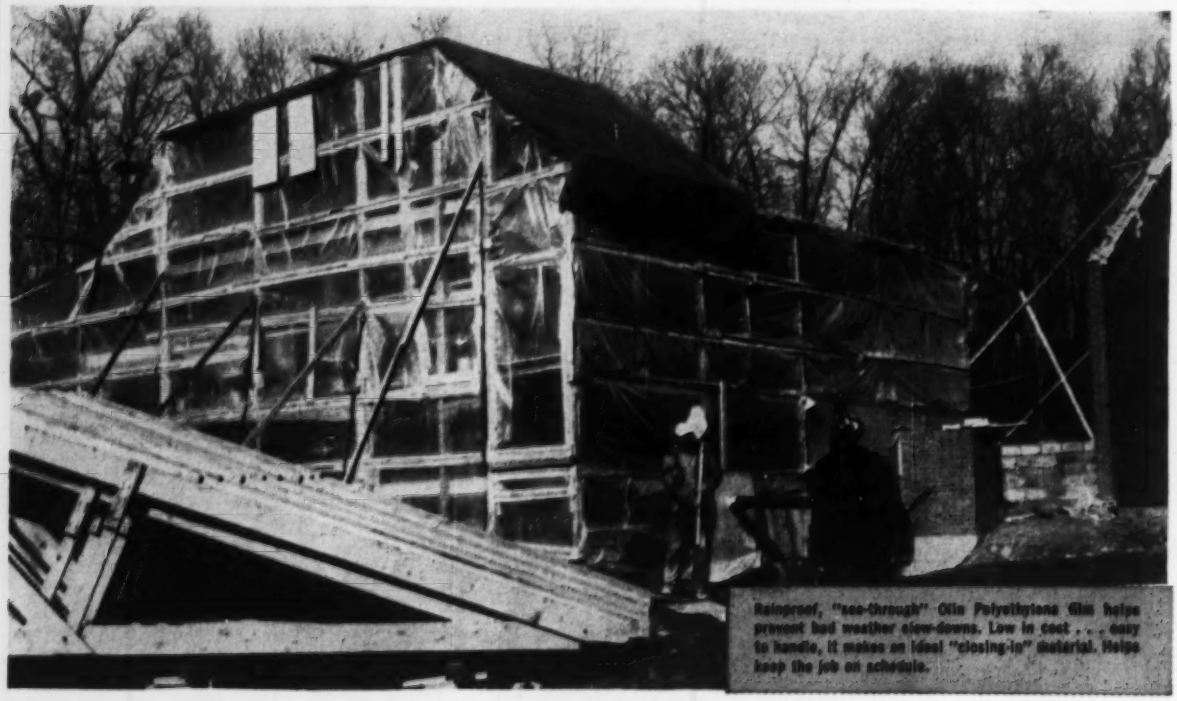

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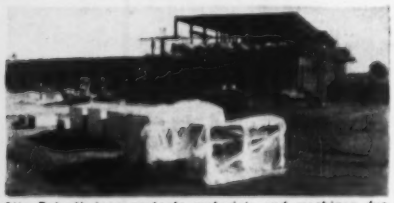

Olin Polyethylene protects materials and machines during wet, rainy periods. Its "see-through" quality makes supplies and equipment easy to locate.

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Builders everywhere are turning to Olin Polyethylene film as the ideal moisture barrier with many varied uses. In bad weather especially, using Olin Polyethylene as a "closing-in" and protective covering material can save wasted days, keep the work on schedule. Light, easy to handle, and re-usable Olin Polyethylene saves on labor and material costs whether it's used for protection or in curing and slab construction work – gives you the kind of job you like to see, easier and faster.

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Meets FHA Minimum Property Requirements . . . Fed. Spec. UUP-147 pertaining to moisture vapor control.

Look us up in Sweet's Catalog! (1957 Edition)
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Also under . . . AIA File No. 24-D (NN)

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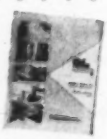

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ENR 257

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B. F. Goodrich All-Nylon tires average 3,000 hours' service on Florida Turnpike

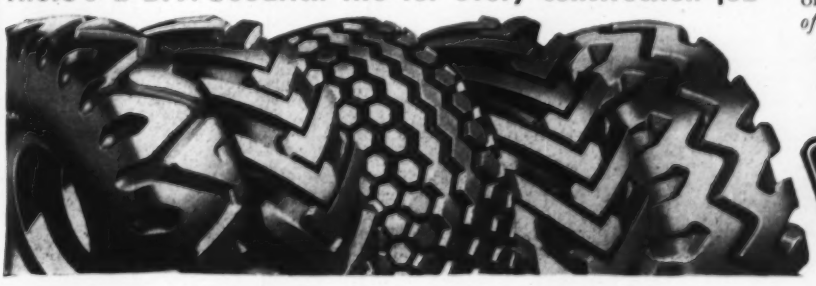
THE unit above is one of a hundred operated by the Ralph E. Mills Company on the Florida State Turnpike. This contractor builds roads all over the world, owns numerous vehicles. Here the job is grading and filling. 25-ton loads of earth must be moved through soft, sandy soil—work that calls for real traction.

That is why the company uses B.F.Goodrich *all-nylon* Super Traction tires, finds they work as many as 3,000 hours, thanks in part to the superb on-the-job service the local B.F.Goodrich dealer gives. Super Traction cleats are thick and widely spaced to take a deep bite into the soil and give you positive traction. Yet the tread is wide for maximum flotation in soft, sandy soil.

Under the tread is the B.F.Goodrich *all-nylon* cord body. It withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. The *all-nylon* Super Traction body outwears even the extra-thick tread, *can be retreaded over and over.*

Your B.F.Goodrich dealer has a complete line (left) of money-saving tires for your construction work. See him today or write *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

There's a B. F. Goodrich tire for every construction job



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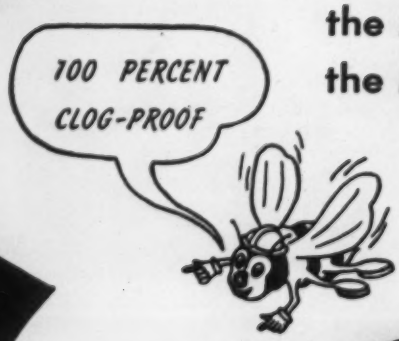
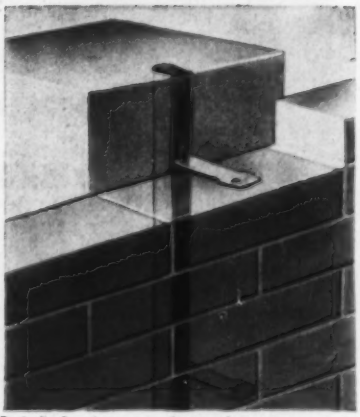


Available in . . .

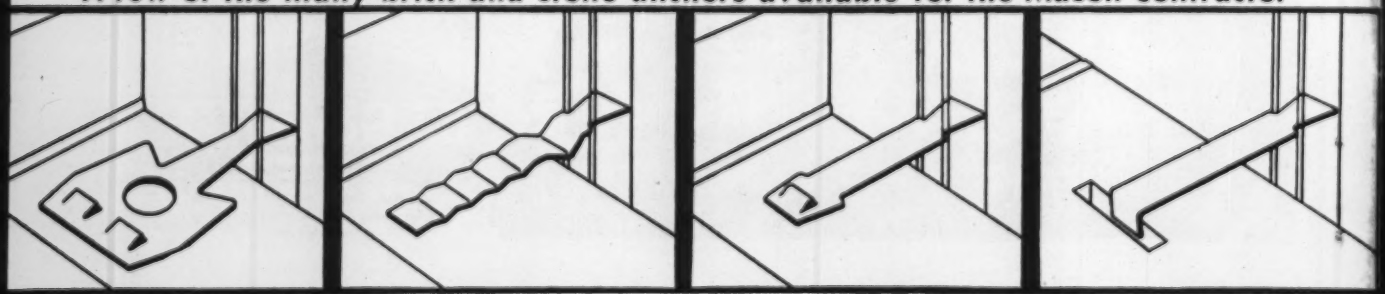
GALVANIZED STEEL • COPPER
ZINALOY (Zinc Alloy) • STAINLESS STEEL

Here's how the Gateway "BEE-NUT" Works!



Brick facing anchored to concrete column using GATEWAY'S "Bee-Hive" Dovetail Anchor Slot and Brick Anchors.

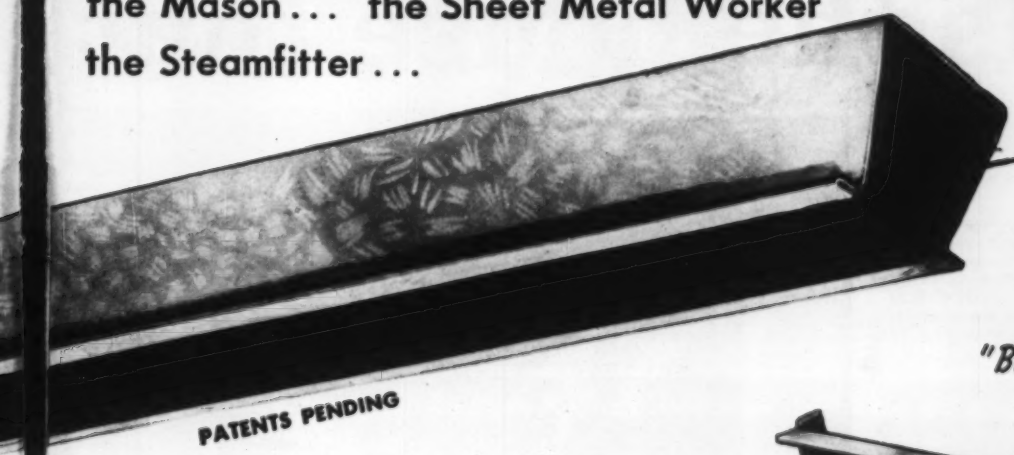
A few of the many brick and stone anchors available for the Mason Contractor



Masonry anchors available in Galvanized Steel, Copper, Zinaloy and Stainless Steel in various gauges.

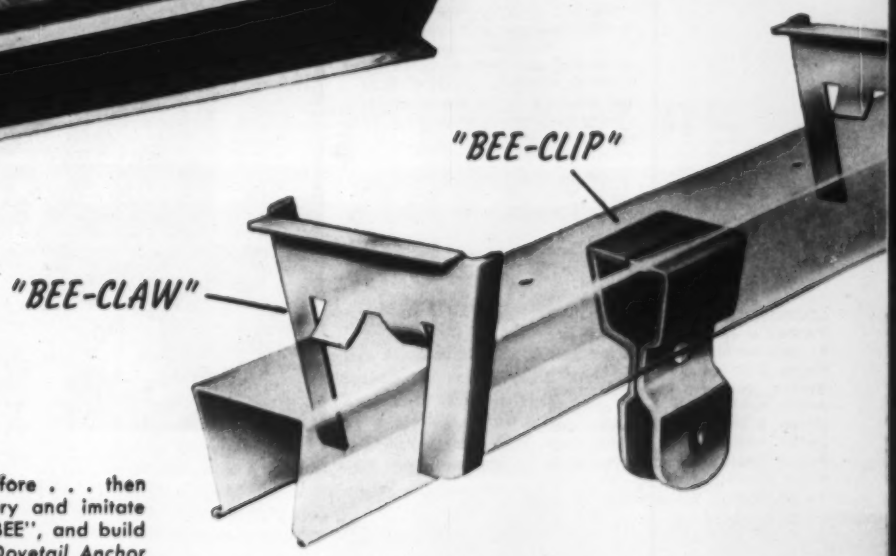
ANCHORING SYSTEM

the Mason . . . the Sheet Metal Worker the Steamfitter . . .



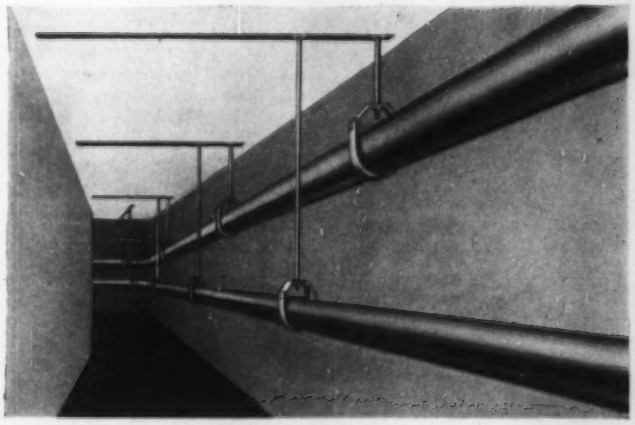
Face Sealer makes Slot 100% clog-proof . . . guarantees positive dimensional shape.

PATENTS PENDING



Nobody ever did it to Dovetail Slot before . . . then Gateway had an ingenious idea — to try and imitate the Master Engineer and Architect, the "BEE", and build a "hive" — result: *"Gateway Bee-Hive Dovetail Anchor Slot"* Fibre was wax treated for waterproofing and meticulously laid in the slot for cellular construction — then "sealed" the opening forever against the elements . . . The result: an Anchor Slot that *stays accurate in shape* during handling, shipping and concreting . . . Every inch . . . every mile . . . of Bee-Hive Anchor Slot is given this Bee-Hive Filler. You can't get this protection from any other dovetail. It's exceptional uniform structure and high quality are guaranteed.

This is the family of "BEE" Anchors for use with Gateway's fabulous *"Bee-Hive Dovetail Anchor Slot"*. Here is one economical Anchoring System to Concrete for every conceivable problem of attaching to or hanging from a concrete ceiling—floor—wall—column or beam. Gateway offers the Architect and Engineer the most complete selection of anchoring devices and choice of metals to meet the most exacting specifications. Gateway's "Engineering Rating Charts" give the Designer and Builder the first realistic approach to a much neglected problem — the problem of designing and building Safe



One of the numerous applications of the "Bee-Hive" Anchoring System using "Bee-Hive" Dovetail Anchor Slot, "Bee-Nuts" and threaded rods to support piping in tunnels.

Gateway ENGINEERING COMPANY

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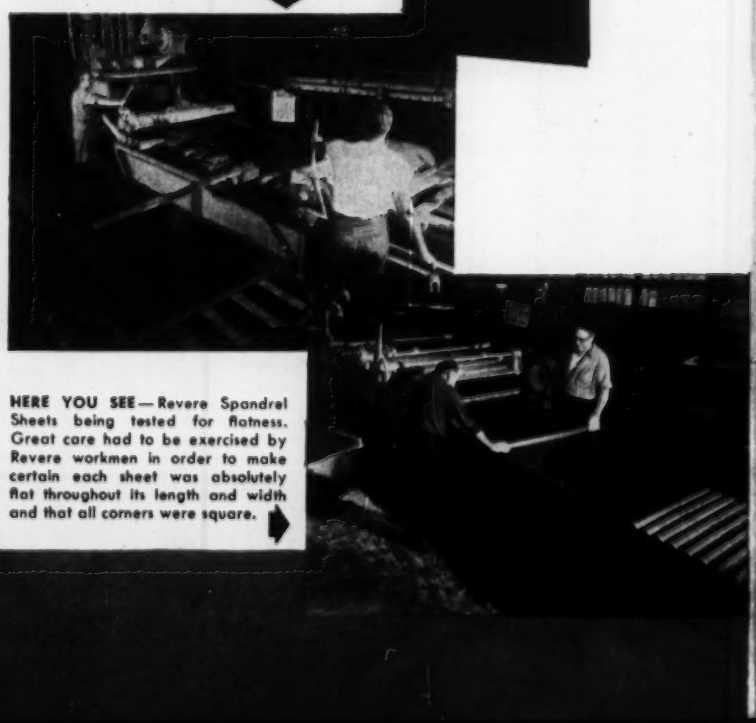
LOWERING ONE OF THE BRONZE PANELS into place. Panels using Revere architectural bronze sheet for spandrels were prefabricated by GENERAL BRONZE CORPORATION and delivered at the site ready for slipping into place. Panels are 4'7" wide by one-story high.

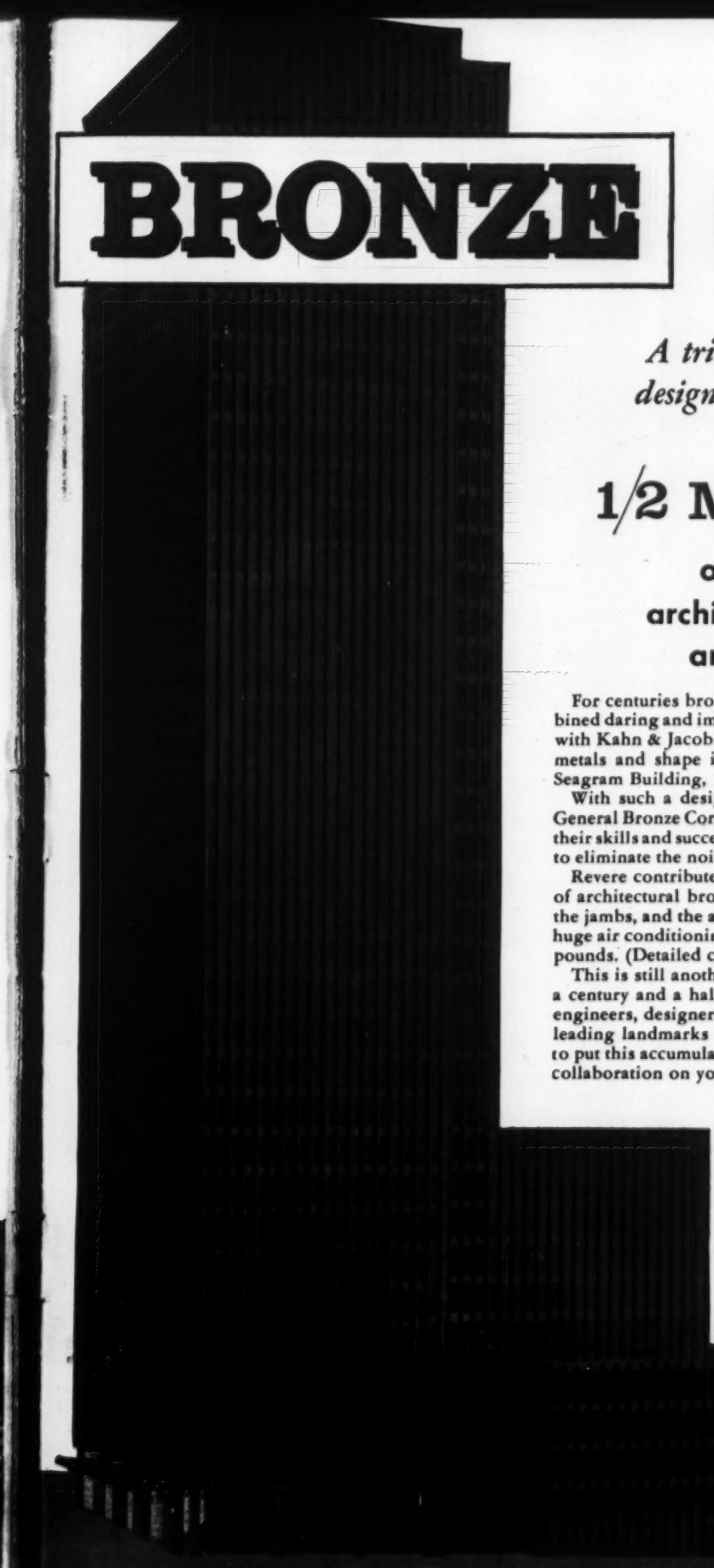
SHOWING ONE OF THE 4,554 PANELS each containing a spandrel sheet of Revere Architectural Bronze, weighing a total of 325,000 lbs.

SECTION SHOWING FIRST-FLOOR PANELS in place and mullions ready to take additional panels on floor above. GEORGE A. FULLER CO. is the general contractor. Revere Extruded Architectural Bronze in 3 different shapes is used for the muntins and jambs, while Revere Architectural Bronze Sheets are used for spandrels in the panels and the louvers in the air conditioning cooling tower.

NO ROOM FOR ERROR HERE— Directly below you see the spandrel sheets being stretched at Revere's New Bedford plant prior to being shipped to GENERAL BRONZE CORP.



HERE YOU SEE—Revere Spandrel Sheets being tested for flatness. Great care had to be exercised by Revere workmen in order to make certain each sheet was absolutely flat throughout its length and width and that all corners were square.



BRONZE built

A tribute to modern structural design and production ingenuity

Contains over

1/2 MILLION LBS.

of REVERE

architectural bronze sheets and extruded shapes

For centuries bronze has symbolized endurance. But it took the combined daring and imagination of Mies van der Rohe and Philip Johnson, with Kahn & Jacobs as associate architects, to take this most ancient of metals and shape it into a striking, modern, 38-story landmark . . . Seagram Building, 375 Park Avenue, N. Y. C.

With such a design, structural problems were bound to occur. But General Bronze Corporation, working with various suppliers, combined their skills and successfully met those challenges. Bolting the steel girders to eliminate the noise of riveting, for example, was a major innovation.

Revere contributed its share by furnishing all of the spandrel sheets of architectural bronze, 3 of the extruded shapes for the muntins and the jambs, and the architectural bronze sheet for the louvers used in the huge air conditioning cooling tower, a total of more than a half-million pounds. (Detailed captions opposite page.)

This is still another example of how Revere, since its founding over a century and a half ago by Paul Revere, has worked with architects, engineers, designers and contractors in creating many of the country's leading landmarks . . . and another good reason why it will pay you to put this accumulated knowledge to work for you by seeking Revere's collaboration on your next project.

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Manufacturers of Revere Sheet, Roll and Strip Copper for roofs, gutters, downspouts and flashing . . . Revere Architectural Bronze extruded shapes and sheets for spandrels, muntins, mullions, jambs, louvers and decorative purposes . . . Revere Copper Water Tube for hot and cold water lines, plumbing lines, vent, waste and drainage lines, underground service and processing lines, radiant panel heating, air conditioning lines, and oil burner lines.

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for Every Phase of the
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Reader Comment

Dimensions Interchanged

SIR—In the floor plan in the Jan. 17 issue of ENR, p. 33, the dimensions appear in error.

J. E. K. KRYLOW
Engr., Comm. & Signals
Pennsylvania Railroad Co.
Buffalo, N. Y.

Editor's Note—Mr. Krylow is correct. To have the floor plan correlate with the picture, the plan had to be reversed. Our art department, in redrawing it forgot to reverse the outside dimensions for the width of the building.

Fly-Ash Data Needed

SIR—The article entitled "Mile-Long Face Lift for a Weary Pier" which appeared on Page 36 of your November 1st issue, was read with considerable attention and interest. However, the data in the section entitled "Fly-Ash Concrete" are incomplete. The table on composition of the fly-ash lists certain percentages by weight. No tolerances are shown. This is impractical. Surely the percentages listed are either maxima or minima; or, even maxima in certain cases and minima in others, as is the case in Table I of ASTM Tentative Specification C 350-54T "Fly Ash for Use As an Admixture in Portland Cement Concrete." Also, under "Carbon Content" is shown "Less on Ignition. . . . " This should be "Loss on Ignition." Further, the article states:

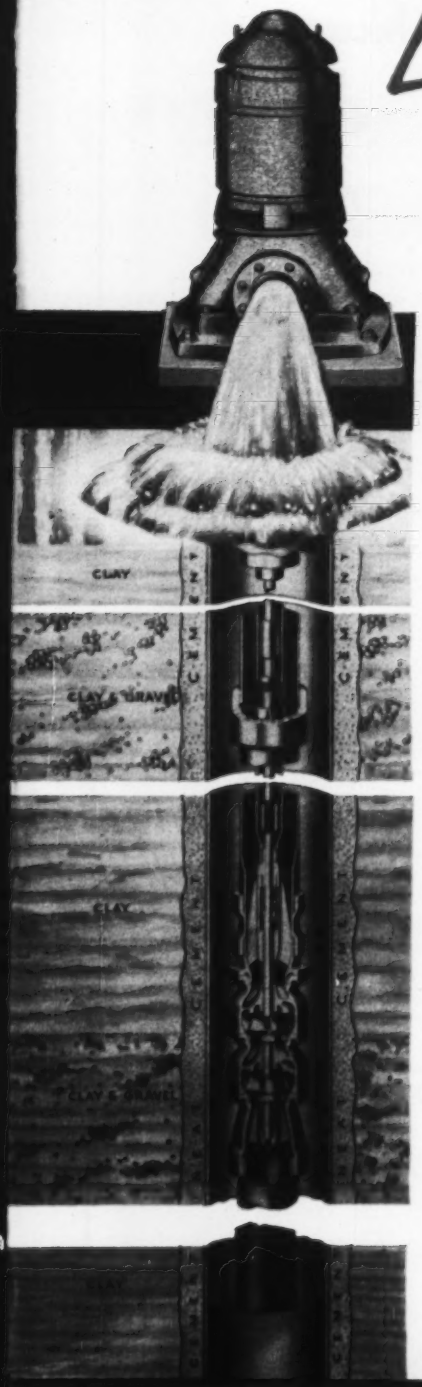
> "Specifications call for a required strength of 3000 psi after 90 days. Test cylinders indicate a range of between that figure and 6000 psi with the mean strength considerably above the specified lower limit."

Surely, strengths must have been specified, or at least measured, at earlier ages than 90 days. Information in regard to the earlier-age behavior of this concrete would be most interesting. This would be so, particularly to those who may be inclined to use this type of concrete . . . "in future under-water

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Layne knows more about water bearing formations!



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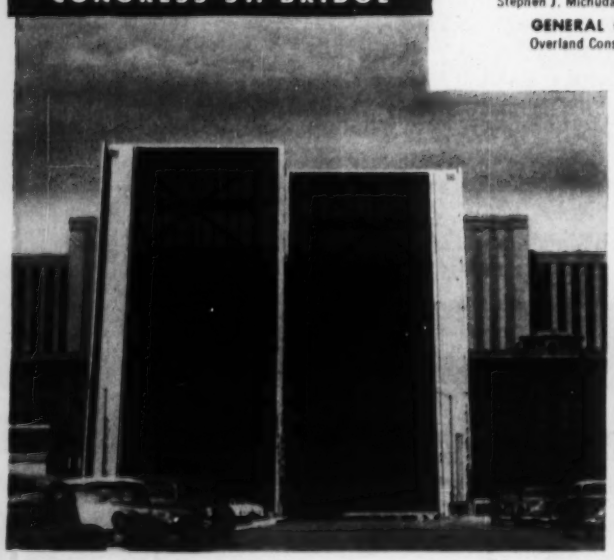
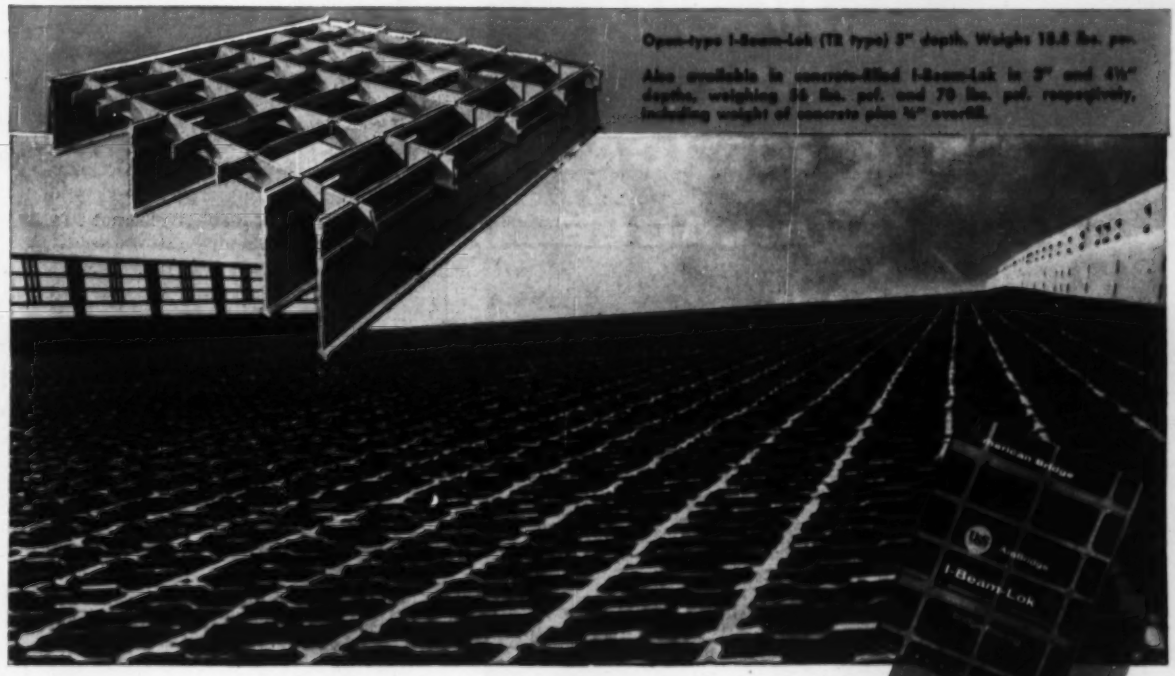
CONGRESS ST. BRIDGE



VAN BUREN ST. BRIDGE

# of USS AMBRIDGE I-BEAM-LOK


Open-type I-Beam-Lok (TR type) 5" depth. Weighs 18.8 lbs. per.
Also available in concrete-filled I-Beam-Lok in 5" and 4½" depths, weighing 86 lbs. psf. and 70 lbs. psf. respectively, including weight of concrete plus ½" overfill.
I-Beam-Lok

New bascule bridges will carry two of the city's busiest thoroughfares over the Chicago River. One is the Congress Street Bridge, now open to traffic, and the other is the Van Buren Street Bridge, soon to be opened. The roadways of both crossings are of lightweight USS AmBridge Steel Flooring.

THE CONGRESS STREET BRIDGE, in the foreground of the picture on the opposite page, consists of two double-leaf, deck truss, trunnion bascule bridges. They are parallel but staggered 31′-7 5/16″. Each is 244′-8⅜″ long, c-c of trunnions, and has a 43′ roadway and a 9′-8″ sidewalk. 19,033 sq. ft. of 5″ open USS AmBridge I-Beam-Lok flooring was used for the roadways, and 3,846 sq. ft. of 2″ Tee-type concrete-filled sidewalk flooring for the walkways.

THE VAN BUREN STREET BRIDGE, in the background of the picture, is a double-leaf, trunnion bascule bridge, 210′-4″ long, c-c of trunnions. It has a 44′ roadway and two 8′-3″ sidewalks. The roadway is floored with 8,475 sq. ft. of 5″ open I-Beam-Lok. 3,224 sq. ft. of 2″ Tee-type concrete-filled sidewalk flooring was used for the walkways.

If the roadways of these important, heavily traveled bridges had been floored with conventional 7″ concrete slabs instead of open I-Beam-Lok, total floor weight would have been 1,155 tons, or about 3½ times heavier than the 259 tons of I-Beam-Lok involved.

USS AmBridge I-Beam-Lok open-type steel flooring is available in units up to 6′-2″ in width and up to 49′ in length. This lightweight, all-steel flooring with its strong, full 5″ depth can be applied directly to stringers on spans up to 4′ centers to permit H-20 loadings. It does not require secondary supports. It combines weight saving and reduced cost with roadway rigidity, ease of erection, and low maintenance costs. For more information about the time- and money-saving advantages of this lightweight steel flooring in bridge construction, contact the sales office nearest you.

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. . . Reader Comment

construction, particularly in climates where alternate freezing and thawing is likely." The strength development in the earlier ages (10 to 40 days, for instance) is sometimes critical in the development of durability in the surface of concrete.

Finally, I was unable to determine from the article whether or not purposeful air entrainment had been used in the concrete. This might well have been stated, in view of the remark "Additional handling equipment is necessary, weighing operations are required, and mixing is more involved than when using air entrainment additive alone."

C. E. WUERPEL
Vice President
Marquette Cement Mfg. Co.
Chicago

Fly-Ash Data Supplied

Sir: The questions raised by Mr. C. E. Wuerpel in his letter discussing the article, "Mile-Long Face Lift for a Weary Pier" (ENR Nov. 1st issue) are well taken. The following will serve to supply the data which were omitted from the table for composition of the fly ash, as published, and also to answer the other questions raised by Mr. Wuerpel.

1. The table giving the composition of the fly ash should read as follows:

Chemical Composition	*Per Cent By Weight*
Silicon dioxide (SiO_2), not less than	40.0
Aluminum dioxide (Al_2O_3), not less than	15.0
Acid soluble sulfate (SO_3), not more than	3.0
Magnesium Oxide (MgO), not more than	3.0
Loss on ignition, not more than	5.0
Moisture content, not more than	3.0
Carbon content, loss on ignition at 1500°F., not more than	5.0
Physical Properties	
Fineness, specific surface (Blaine Meter), not less than 3000 sq. cm./g.	
Material retained on 325 mesh sieve, not more than 10 per cent.	

2. Tremie concrete mixtures are required to obtain 3000 psi compressive strength at 90 days. Test cylinders are broken at earlier ages, the average strengths at 3 days being 1450 psi, at 7 days 1973 psi, at 28 days 3290 psi, and at 90 days 4173 psi. The tremie concrete contains more cement than is required to obtain the specified strength, as is customary for concrete poured under water. The mix has the

following composition:

Cement (Type I)	423 lbs.
Fly Ash	141 lbs.
Sand	1225 lbs.
2" Crushed Stone	1206 lbs.
¾" Crushed Stone	805 lbs.
Water	260 lbs.
Darex	10 oz.

3. Removal of forms, or shoring, supporting the concrete is prohibited until control test specimens show a minimum compressive strength of 2000 psi. This usually occurs 7 days after the concrete is poured.

4. All of the concrete on this project is specified to contain an air content by volume of 5 per cent, plus or minus 1½ per cent. This is obtained by adding the air entraining admixtures at the mixer.

FRANK L. LINCOLN
Partner
Foy, Spofford & Thorndike
Boston

Shortage of Engineers?

SIR—The writer believes that the real shortage is not engineers but "desire of accomplishment" within the individual engineer.

There are but two classes of engineers: "those who accomplish to live" and "those who live to accomplish".

W. C. SECHRIST
Havana, Cuba

CALENDAR

National Society of Professional Engineers, spring meeting, Hotel Francis Marion, Charleston, S. C., Feb. 15-16.

American Society of Civil Engineers, winter meeting, Jackson, Miss., Feb. 18-22.

Association of Asphalt Paving Technologists, annual meeting and technical session, Atlanta Biltmore Hotel, Atlanta, Ga., Feb. 25-27.

American Concrete Institute, 53rd annual convention, Statler-Hilton Hotel, Dallas, Tex., Feb. 25-28.

American Society of Heating and Air-Conditioning Engineers, 63rd annual meeting, Conrad Hilton Hotel, Chicago, Ill., Feb. 25-28.

University of Colorado, 20th annual highway engineering conference, University Memorial Center, Boulder, Colo., Feb. 28 and March 1.

American Society of Photogrammetry, American Congress on Surveying and Mapping, Shoreham Hotel, Washington, D. C., March 3-9.

How to Choose Waterstop for optimum performance in Water and Sewage Treatment Plant Joints

Ultimate Elongation, Retention in Concrete Most Important Factors

The principal function of waterstop is to keep concrete joints watertight where hydrostatic water pressure is present, and where movement of the concrete tends to open the joint.

To be effective, and to perform its function, the waterstop must:

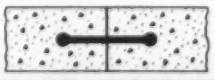
1. **Be made of a material which has high tensile strength and permit maximum elongation without losing its elasticity. This is referred to as "ultimate elongation."**
2. **Be made of a material which permits a good concrete bond.**
3. **Be designed in such a way that concrete can make full contact with, and assure good retention of the waterstop during movement of the concrete.**

Many materials and designs in waterstop have been developed. Today, the most widely used materials are rubber, neoprene and polyvinylchloride. Designs vary with individual manufacturers and each design has its adherents. There seems to be, however, general agreement by many governmental and private specifying authorities, after years of testing and actual installation, that the rubber material and the dumbbell design (below) offer more advantages because of its inherent tensile strength, ultimate elongation, ability to bond with concrete, superior retention in the structure during contraction, and because of its comparatively low cost.

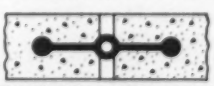
Proponents of the polyvinylchloride material claim, quite correctly, that it is superior to rubber from the point of oxidation and weathering and resistance to chemicals and oils. This is a negligible factor 95% of the time, because only about 5% of waterstop installations present the situation where the material is subject to weathering, chemicals, etc. The rest of the time, the waterstop is buried in the structure itself.

Where waterstop is exposed, manufacturers of the dumbbell type offer it in polyvinylchloride or neoprene.

Retention of the waterstop in the joint during contraction or settling of the structure is another important consideration in choosing a type for your specific application. It is here that the dumbbell design is demonstrably superior to any other which has been developed to date. The design of the dumbbell is such that, when the concrete contracts and the joint opens up, the outer dumbbell edges become more tightly engaged with the concrete, making a tighter seal as the tension increases due to movement either in the joint or increasing water pressure on one side of the joint.



9" DUMBBELL TYPE EMBEDDED IN CONCRETE WITH A CONSTRUCTION JOINT



9" HOLLOW BULB TYPE EMBEDDED IN CONCRETE WITH AN EXPANSION JOINT

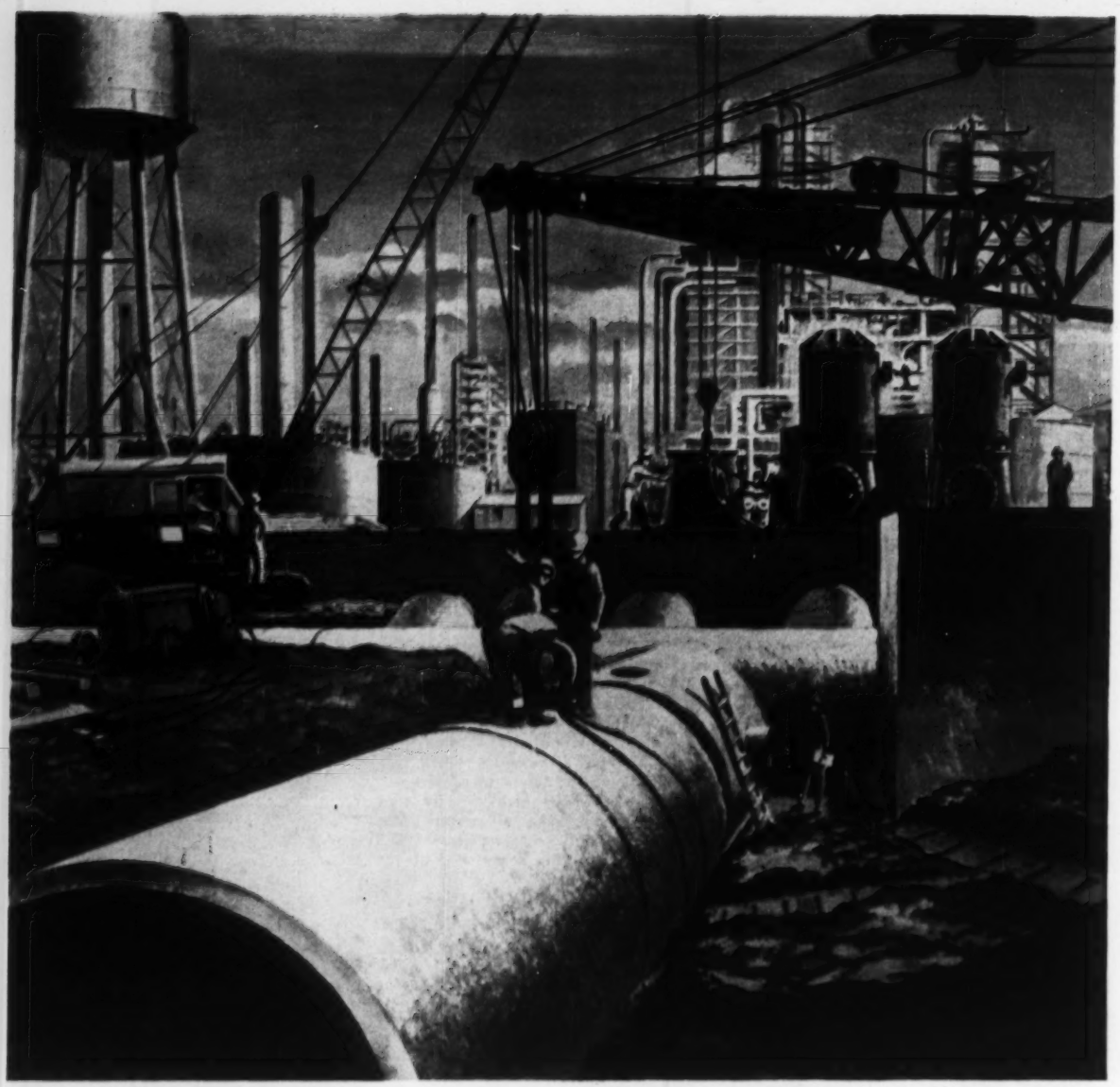
Field Splicing of Dumbbell Type

Servicised Products Corporation has developed a new Union which provides a simple method of joining the ends of dumbbell waterstops, making it just as fast and easy to field splice rubber and neoprene waterstop as the joining of the polyvinylchloride types.

The Union is made in the same cross-section, and from the same material as the waterstop. It is hollow, except for a solid web at the center. After adhesive is applied to the waterstop ends, they are inserted in the Union and pushed against the centering web. This completes the splice.

Dumbbell type rubber and neoprene waterstop are fully described in a special Waterstop Circular available from Servicised Products Corporation upon request. The Union and an interesting new development, Split Type, are also illustrated and described in the circular. Write for it today.

SERVICISED PRODUCTS CORPORATION
6051 W. 65th Street, Chicago 38, Illinois



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It takes a staggering amount of water to run an oil refinery such as the one recently built for the Tidewater Oil Co. at Delaware City, Delaware. Specifications required twin 78" LOCK JOINT REINFORCED CONCRETE CYLINDER PIPE-LINES to supply water to this plant. The combined capacities of these two lines would satisfy the normal requirements of a city of over two million population.

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ENGINEERING NEWS-RECORD

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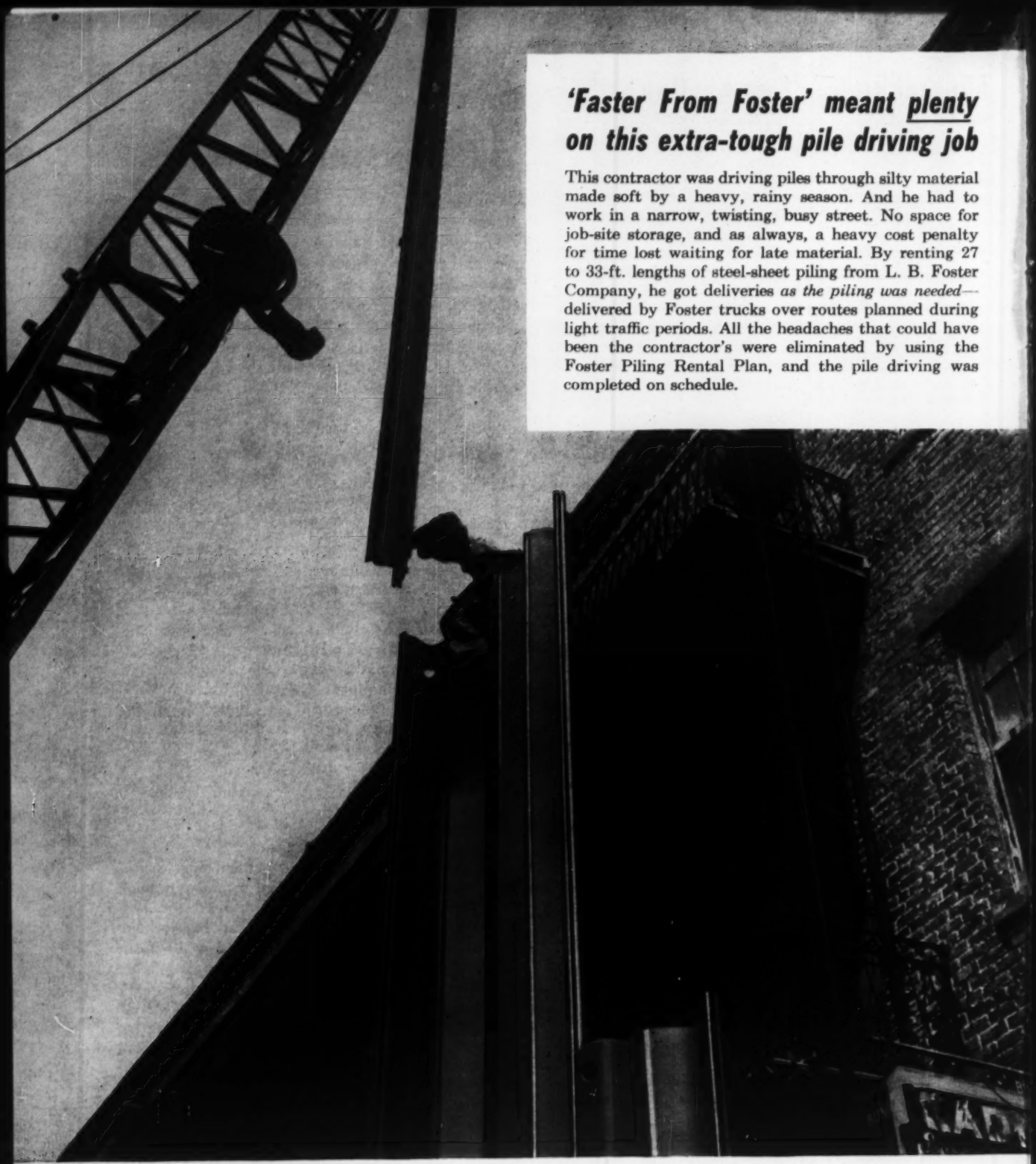
THE CONSTRUCTION WEEK

FOR A-POWER, A BIG WEEK—A 5,000 kw experimental nuclear power plant began operation at AEC's Argonne National Laboratory in Chicago last week. A boiling water reactor, it is the first such experimental unit completed. And in Milwaukee, plans to build a 60,000 kw plant of advanced design (controlled recirculation boiling reactor) were announced at Allis-Chalmers Manufacturing Co., and simultaneously by the group of 10 utilities who will build the $20 million project. Plans call for completion in 1962, at a site probably in southern Minnesota. Meanwhile, work progressed at Shippingport, where the 60,000 kw commercial plant under construction will be the nation's first (see p. 44).

COAL MAN'S RIVER—Scheduled to start this week will be a 3 mph hour movement of a mush-like mixture of coal and water through a 108 mile, $12 million 10 in. dia welded pipeline between Georgetown and Eastlake, Ohio. Pittsburgh Consolidated Coal Co. has gambled big on the project, planning to transport 3,500 tons of coal per day to the Cleveland Electric Illuminating Plant at Eastlake, where it will be dewatered and stockpiled. The coal company figures a saving of about $1.50 per ton, delivered. Officials say that until now, 10 miles is the furthest that coal has been transported by pipe. Three railroads—the Pennsylvania, Nickel Plate and New York Central—hold 15% ownership options in the venture.

COLLEGES PLAN FOR WAR-BABY INFLUX—THE NEW YORK TIMES reported this week that colleges in the metropolitan area plan to spend $250 million, most of it on construction, in the next 10 years to accommodate a flood of new high school graduates. The tidal wave that has inundated secondary schools for the last 10 years is expected to swell the 1960 graduating classes in city and suburban high schools by one third (compared to 1956). And by 1970, the rate is expected to double.

JUDGE RULES SPEEDING ISN'T ILLEGAL—A Lea County District Judge's ruling that speeding per se is not a law violation has thrown New Mexico law enforcement authorities into an uproar. District Judge John R. Brand dismissed a test case against a motorist charged with driving 70 mph in violation of the state's 60-mph limit. Brand ruled the state must not only prove a motorist was exceeding the speed limit, but that his driving was such as to be "unreasonable or imprudent." New Mexico's speed limit was set at 70 mph by the 1953 legislature, which also empowered the State Highway Commission to establish lower limits if it found them necessary. The commission set a statewide 60-mph limit in 1954.



'Faster From Foster' meant plenty on this extra-tough pile driving job

This contractor was driving piles through silty material made soft by a heavy, rainy season. And he had to work in a narrow, twisting, busy street. No space for job-site storage, and as always, a heavy cost penalty for time lost waiting for late material. By renting 27 to 33-ft. lengths of steel-sheet piling from L. B. Foster Company, he got deliveries *as the piling was needed*—delivered by Foster trucks over routes planned during light traffic periods. All the headaches that could have been the contractor's were eliminated by using the Foster Piling Rental Plan, and the pile driving was completed on schedule.

Foster Piling Rental Service is complete—for all types of steel-sheet piling (and lightweight piling). You get the right type, the exact section, the exact length . . . when you need it . . . and on the low fixed cost of our rental plan. Ask your nearest Foster office for details and prices on your temporary piling needs, and see for yourself the savings in the Foster Piling Rental Plan.

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WASHINGTON OBSERVER

There's little or no chance that the government will invoke price controls. Indeed, contractors buying construction materials face the prospect of further increases in reinforced concrete, plates, structurals and so on in the months ahead. Administration officials are talking down the interpretations put on President Eisenhower's news conference remarks of last week about possible government-established price ceilings.

•

The word here is that Eisenhower went "one step too far" in his theorizing about the consequences of the rising price trend. Logically, these government officials say, continuation of the current trend in prices and wages risks inflation. And the Administration is talking as loudly as it can to discourage further rises.

But price controls? No. Commerce Secretary Weeks flatly said "no" just one day after Eisenhower made his off-the-cuff remarks to reporters. And this week, advisers close to the President confirm that position. In Congress, there is no response to the President's hint that if prices or wages go up too fast, government fiat would follow.

Estimates of prices in Washington are these: Prices of construction materials will not go down and more probably will go up in the months ahead. The demands of the highway program, of industrial expansion and commercial building are still high. And though new capacity is being built, the pressure is expected to continue for awhile.

•

Control of consumer credit is another matter. The Administration will ask for controls if the threat of inflation persists. Officials philosophize this way: The Federal Reserve Board, with its responsibility over money and credit, should have the power to control availability of money for buying such items as cars and houses and TV sets. Consumer credit control on housing, though, would not be invoked in the present tight-money situation affecting the housing industry.

•

Subcontractors should find it easier from here on to get information out of the Interior Department on prime contractors in the running for contract awards. It amounts to getting a better chance at construction programs that total about $250 million a year.

Idea is to supply those who ask, the names of prospective bidders on prime contracts. Bureau of Reclamation does the most construction business done by Interior; it has about 84 projects under construction now, including the huge Upper Colorado River Project which has just begun.

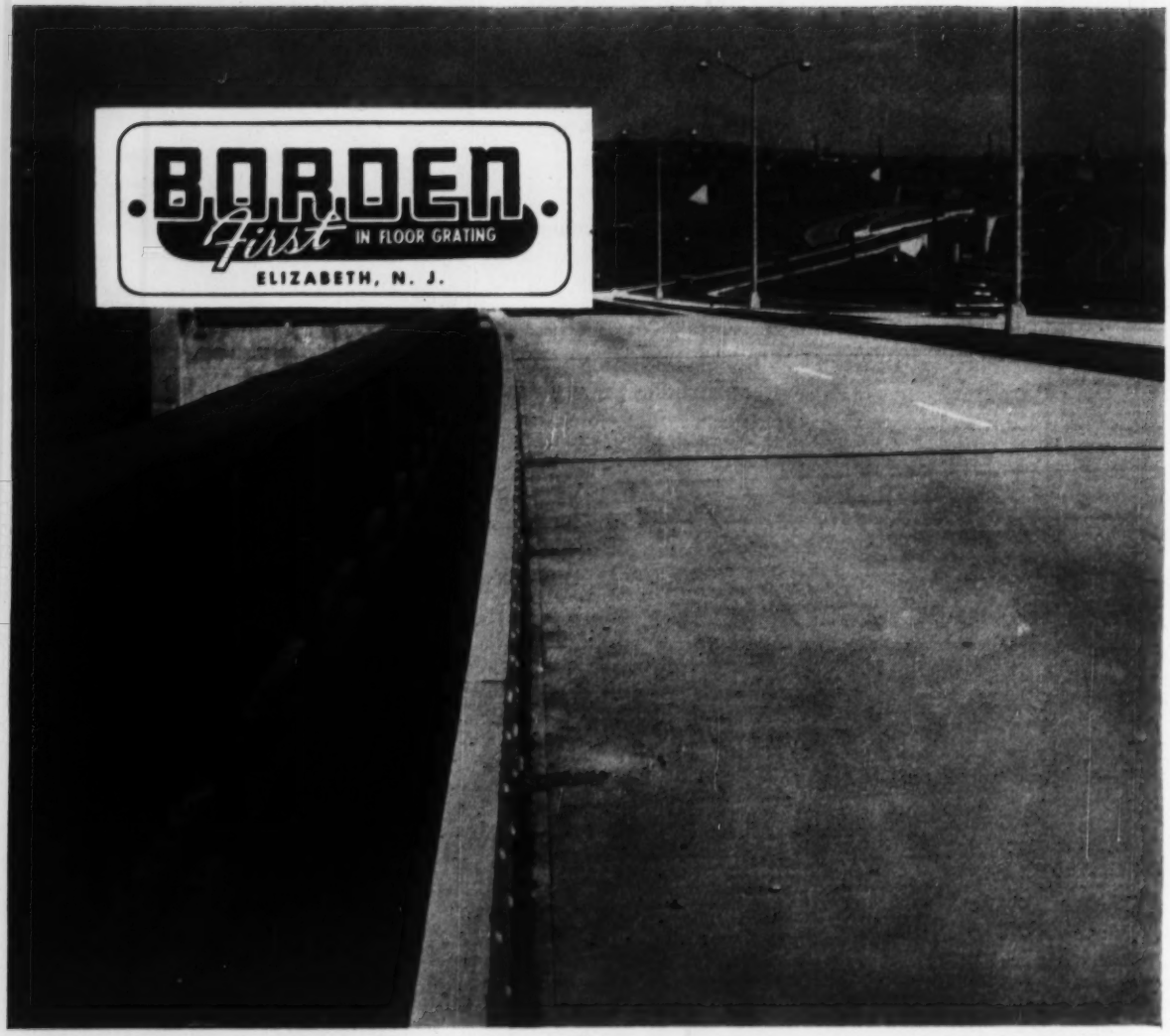
Up to now, only the contracting officers had the list of prospective bidders. From here on, you can get the names on Bureau of Reclamation files from Assistant Commissioner McClellan at Denver.

•

Congressional lawmakers are looking at the $700 million lease-purchase program for government buildings: They want to find a way to get them built. So far lease-purchase has failed to do so.

Sen. Pat McNamara's public works subcommittee starts hearings on the program next week, hoping to come up with suggestions for new legislation. He's going to get ideas from government officials, contractors, investors, labor leaders, and the like.

Cong. Robert E. Jones has a bill to kill lease-purchase. He would have the 150 projects already approved given the status of Congressional authorization, then let the agencies submit appropriations requests to get them built.



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- **Revenues for highway program**

Construction Takes State Spotlight

Construction matters were in the spotlight this week, as 44 of the nation's state legislatures began to get down to business in their 1957 sessions.

A little surprisingly, most of the new bills emphasized efforts to foster industrial expansion and various aspects of labor relations, while the highway legislation—which was expected to reach flood proportions—took a secondary place along with provisions for water use and control, state building programs and the like.

All state legislatures except Virginia, Louisiana and Mississippi had regular sessions scheduled. And Florida won't convene its lawmakers until April.

There were plenty of highway measures introduced, of course, but they were concerned mostly with raising revenues to pay for the new highway program. Very few yet introduced dealt with straightening out the many inconsistencies in the state laws—such as those governing acquisition of right-of-way which most observers believe will provide the greatest obstacle to the $100 billion, 13 year highway program.

Observers pointed out, however, that many of the indicated changes are complex, and need careful study before presentation to the lawmaking bodies.

In a nation-wide check, ENGINEERING NEWS-RECORD's correspondents in the 44 state capitals turned up this scoreboard of bills submitted for consideration:

- Measures to promote industrial construction (including three increases in funds to existing agencies) introduced in 16 states.
- Labor legislation (including right to work laws, union controls, minimum wages and compensation law adjustments) in 25 states.
- Measures to control and protect water resources, introduced in 16 states.
- Appropriations for state institutions and office buildings, in 14 states.
- Tax measures (mostly for added highway revenues), in 21 states.
- Bond issues (again, mostly for highway purposes), in 6 states.
- Control of architects, engineers and contractors, 3 states.

And of course there were many other legislative facets, not easily classifiable in a general listing—including bills in Nebraska and Kansas that would give preference to local residents in all bidding for state work (including construction).

• **Get the business**—Obvious concern with rising tax rates and the need for a better economic base were reflected in the 16 bills aimed at increasing efforts to attract industry. Typical was Arkansas, where legislators considered a measure that would aid local industrial cooperatives in selling bonds with which to finance construction of plants for lease to industry, by empowering the state to buy up to 50% or $2 million of the bonds issued.

California's governor called for establishment of a new State Division of Industrial Development; Georgia looked over a proposal for a study of means to encourage industry to locate in the state; Idaho senators introduced a series of bills to give tax benefits to private industry; North Dakota considered creation of a State Economic Development Commission and Texas gave thought to repealing a constitutional amendment that prohibits using tax funds to advertise the state's attractions.

• **Labor legislation**—Clearly concerned over possible abuses of labor's powers, solons in many of the states gave thought to many measures concerning aspects of the problem ranging from establishment or strengthening of fair employment practices laws to a number of very strict controls on unions and union funds.

Colorado, for instance, proposed extending its fair practice laws—now applying only to public employees—to all employment; California, Kansas and others wanted new laws. Many states which have no minimum wage laws at all now are pondering such measures, others are raising minimums—highest now under consideration is in Michigan, where the minimum would be set at $1.25 an hour. In addition, eight states, including New York, Arizona and others, want to raise benefits for unemployment and for workmen's compensation claims.

On the question of control of union activities, here are some of the proposals: California wants to make it mandatory that union welfare funds be audited by the state insurance commissioner; New Mexico would prohibit picketing of any establishment or site unless the pickets themselves are employed by the industry involved in the dispute; Iowa wants to curb any picketing that interferes with entrances or exits to business places or the free use of streets. Tennessee plans to make union officials liable for prosecution on grounds of interference with free speech, and in addition, wants to supervise union referendum elections.

• **Highway legislation**—Only a few bills seem to be in the legislative hoppers at the moment concerning state laws that conflict with the aims of the federal highway program.

One of these is in Wyoming, where

. . . Construction takes state spotlight

a bill would transfer to the state and federal government the cost of moving utilities on highway right-of-way. But at the same time, the legislators are considering another measure that would prohibit the State Highway Commission from altering the primary road system without legislative approval—a bill that local observers said was dictated by growing protest from small communities which don't want to be by-passed by the new roads.

Most other matters before the lawmakers concerned financing for the highways. These were generally raises or continuations of emergency gasoline and diesel fuel taxes, and included some proposals for increase in private vehicle and truck registration fees. Montana was considering a ton-mile tax on trucks—but Ohio, mindful of a set-to early last year with surrounding states, was thinking about repealing its axle-mile tax.

• **Water control**—Growing concern over water resources, and control of stream pollution, was evident from the new laws being proposed.

Florida, for instance, proposed creation of a new water resources department; Colorado wants to study its water sources and regulate groundwater uses; Nebraska has a proposal that new irrigation wells be licensed and regulated, and other industrial water uses be licensed. Missouri may create a special agency to control water pollution. New Jersey's governor has urged further study of new water storage areas to supply the northern portions of the state. And in Texas, a bill would authorize a $100 million bond issue to supply funds to purchase storage space in federal flood-control dams —the water then to be sold to communities and cooperatives that could use it.

Minnesota sought new strengthening of its pollution control laws, as did North Carolina. Two states, also, wanted to do something about air pollution—New York and California. In California, the city of Los Angeles wanted legislative permission to inspect and control the sale of anti-smog devices for attachments to automobiles.

• **Buildings**—There were many measures having to do with public, institutional and school construction. Some of them will involve bond issues for financing. Arizona, for instance, wants to build a $20 million skyscraper capitol building at Phoenix. Massachusetts wants a new state office building in Boston. Many state universities, hospitals and other structures are needed.

School proposals fell into two classes —actual arrangements for bond issues and other fresh revenue sources, and readjustments in aid formulas to increase distribution of available funds to the school districts.

Bond issues suggested include one for $150 million in California; $80 million in Georgia; $250 million in New York (for buildings and services of the State University); a proposal to create a revolving fund in New Mexico to supply money to school districts at low interest rates, be repaid from school district taxes. And in California there's another bill to tax publicly-owned utility districts for school purposes.

• **Other proposals**—The list of proposed legislation is very long, of course.

Some of its other highlights include:

Bills in New Mexico and Connecticut affecting architects. New Mexico would limit fees to 3% on major public works jobs, 5% on jobs costing $200,000 or less. Connecticut would issue standard plans to school districts, to eliminate architect fees.

Delaware may expand its highway department into a department of public works.

Connecticut has a bill to authorize a $10 million bond issue to pay for low-cost housing for elderly persons; Michigan would permit creation of inter-city water authorities to develop supplies and distribution systems.

Iowa would grant its cities the right to use eminent domain for urban renewal projects.

Maine has a program to expand its port facilities; Rhode Island legislators may authorize state participation in the $65 million Narragansett Bay flood control plan advanced by the Army's Corps of Engineers; Pennsylvania's General State Authority may be authorized to issue $41 million in bonds, with which it can enter the public housing field.

And North Carolina wants new teeth in its registration law—which now seems to permit anyone to practice engineering if he doesn't claim to be a licensed engineer or surveyor.

San Diego Engineer Groups Urge Choice of Local Firm

San Diego City Manager O. W. Campbell has met with objections from local engineers on his recommendation that one of seven out-of-town firms be chosen to design a proposed $25-million sewer system and treatment plant.

The San Diego chapter of the National Society of Professional Engineers, the San Diego section of the American Society of Civil Engineers and the Structural Engineers of San Diego have filed letters with the city council requesting that San Diego engineers be employed to design the sewer system.

In adidtion, four San Diego engineering firms have asked the council for consideration.

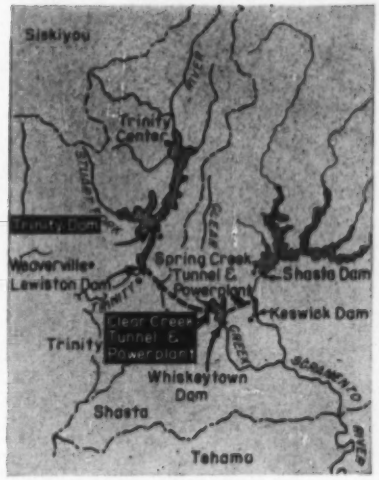
Completion of a new sewerage system is scheduled by city officials for 1960 or 1961.

Photo by Newton

An Old Russian Custom—Even in Canada

First housewarming at any newly built Soviet building must honor the builders, according to Russian tradition.

True to form, then, is Piotr Strounnikov (left) charge d'affaires for the Soviet legation's brand-new home at Ottawa, Canada, who hands gifts to E. R. Crain, R. A. Crain and R. R. Carwardine, of George R. Crain & Sons, Ltd., who were contractors for the embassy building.



On the Trinity River Project: First, Clear Creek Tunnel . . . Now, Trinity Dam . . .

Bid $11 Million Over Estimate

Low bid on the Bureau of Reclamation's Trinity Dam—a unit of the $225 million Trinity River Project in Northern California—is $48,928,100.50. The bid was submitted by a joint venture of six contractors headed by the Guy F. Atkinson Co. of South San Francisco, Calif.

All seven bids submitted on the 485 ft high, 2,500 ft long, 33 million cu yd earthfill dam were closely bunched—and all substantially above the government estimate of $37.6 million.

Further, Trinity Dam is the second instance in recent weeks where a low bid on a unit of the Trinity River Division of the Central Valley Project has gone over the USBR estimate by more than $10 million. In December, the low bid on Clear Creek Tunnel, an 11 mile long, 17½ ft dia hard-rock bore, was $36.6 million against a $25.5 million estimate. Awarding of the contract for this job is still being held up. A joint venture of Shea Co., Henry J. Kaiser Co., Morrison-Knudsen, Macco Corp., and Raymond Concrete Pile Co. were the low bidders for Clear Creek.

Associated with Atkinson on the Trinity Dam bid are M. J. Bevanda, Charles L. Harney, Inc., Ostrander Construction Co., Teichert & Son, and Treptke Co., Inc.

• **Why so high?**—It is not entirely clear why the bids in both cases were high—or perhaps why the estimate was so low. One major contributing factor for the high bid is very likely the isolation of the work. The project is located in a rugged mountain area—between the Trinity Mountains and the Trinity Alps—east of Shasta Dam. The area is far removed from sources of workmen and any close rail connection.

Examination of unit prices reveals that the low bidder's figure is considerably higher than the estimate for all major fill classifications. For example, 9.4 million cu yd of Zone 1 dam embankment was bid at $0.37 per cu yd compared with the estimate of $0.14. Zone 2 dam embankment, 3.8 million cu yd, was bid at $0.16 and estimated at $0.09. (Figures are for placing only.)

In any case, closeness of the bids—second was $49,309,117, third $49,414,723—seems to confirm that construction costs at this time are higher than estimates. Criticism has been made that the estimates were prepared two years in advance of the bidding, and thus weren't currently realistic.

• **Trinity River Division**—This part of the Central Valley Project is planned to have a total power capacity of 233,000 kw.

Trinity Dam and power plant, located north of Redding is to have 96,000 kw capacity. It will store 2.5 million acre-ft of water of which 2.2 million is active storage. At Lewiston a diversion dam and powerplant will be built. Taking off at Lewiston will be the Clear Creek Tunnel, which will end at Cedar Creek where a powerplant will be built. Clear Creek will divert water which would naturally flow almost directly to the Pacific Ocean and turn it toward the Central Valley region of California.

Spring Creek Tunnel will transfer water to the Sacramento River above existing Keswick Dam, where the Spring Creek power plant will be built. Finally, there will be Whiskeytown Dam to store water and supply an irrigation yield of 1.2 million acre-ft annually.

Lewiston, Whiskeytown and Spring Creek units are not due for big call until May 1, May 15, and July 15, 1958, respectively.

Congress has made available $8.4 million, of the $225 million authorized for the project, for the current fiscal year.

Still to be decided is whether the bureau or Pacific Gas & Electric Co. will build the power facilities. PG&E has offered to build the plants and buy water from the government (ENR Oct. 20, 1955, p. 24). A report dealing with the problem is due soon.

GSA Receives Site Bids

General Services Administration has received 21 site bids for the $24.5 million federal office building proposed for Dallas, Texas.

The structure would house an estimated 7,500 government workers.

A choice of sites is expected within 30 to 60 days. Final decision on the site rests with F. G. Floete, General Services Administrator.

Dinosaur Bones—Something New in Walls

A museum to be built by the National Park Service at the Dinosaur National Monument near Vernal, Utah, is to have the bones of dinosaurs as one wall.

An ancient river collected and deposited bodies of many prehistoric creatures at the site of the proposed museum. Covered with sand and sediment, which later hardened into sandstone, the bones were preserved for their eventual discovery in 1909. Quarrying revealed the site to be the richest concentration and variety of dinosaur bones known anywhere.

The museum will replace a corrugated iron shed that now covers the face of the quarry to protect the fossils from deterioration due to exposure to weather. The museum will have a butterfly roof, which will follow the outline of the notch it will enclose. The sides will be of glass to enable visitors to see the sandstone formation that encases the fossils.

The back wall of the museum will be the face of the quarry. It will be 130 ft long and 30 ft high. Here the fossils are so profuse that an arm span placed anywhere will be touching at least one fossil.

The cost of the museum is estimated at $225,000. Bids are to be invited in April or May. Completion is expected in 1958.

The project is under the direction of the Region 2 Headquarters of the National Park Service, Omaha. Howard Baker is Regional Director. Architects are Anshen & Allen of San Francisco.

Wide World Photo

Alloy-Steel TV Tower Topples

Investigators are seeking clues to the sudden collapse Feb. 4 of a 1,262 ft tower under construction for WSM-TV in Nashville, Tenn. Four men working on the tower were killed.

Because the tower crumpled in the middle before it fell, several nearby houses were spared.

The $150,000 tower had been erected to its full height and anchored with 12 guys, but its antenna had not yet been installed. With the antenna, it would have been 1,379 ft high—third highest TV tower in the world. (TV towers in Oklahoma City and Dallas are 1,572 and 1,521 ft high, respectively.)

The new tower was constructed of a low-carbon steel, called T-1, made by U. S. Steel Corp. This steel has a yield point of about 90,000 psi and ultimate tensile strength of 105,000 psi. If ordinary structural steel had been used instead, an additional 100 tons reportedly would have been needed.

General Electric Co. held the general contract for the tower. GE subcontracted fabrication to Blaw Knox Co., which in turn subcontracted erection to John F. Beasley Construction Co., Muskogee, Okla.

• **Wind ruled out**—Officials of the erection company could offer no immediate explanation for the sudden collapse, but discounted theories that a high wind or the vibration of a jet plane might have caused it.

The local U. S. Weather Bureau said that the wind velocity at 1,000 ft at 3 p.m. was 9 mph and at 3:30 p.m. five minutes before the tower toppled, only 7 mph. (A tornado was reported to have passed in the vicinity of the tower several days before; yet no damage from high winds was reported.)

One of the workmen on the ground said that the four men who were killed had been up about 700 ft "carrying out routine duties of tightening bolts when the No. 1 guy cable suddenly gave way. I looked up," he continued, "and saw the middle of the tower buckle . . . the part from the bottom to the midpoint looked like someone closing an accordion." Guy anchorages were ripped out of the ground.

G. A. Wallenstrom, GE engineer, said the tower buckled just above the second guy—about 650 ft up. There were no joints at that point.

The guys, in sets of three, had been connected to the tower at four levels—309 ft, 649 ft, 939 ft and 1,208.5 ft above the ground.

Several investigations to determine the cause of the failure are under way, including metallurgical studies by GE and U. S. Steel.

$30-Million Expansion For Denver Airport

Transportation consultants have recommended a $30-million expansion program for Stapleton Airfield at Denver to enable the facility to accommodate jet passenger planes. It was said to be more economical to expand the existing field than build a new one.

The proposal covers cost of land acquisition, runway construction and expansion of the terminal facilities. The cost of extending and reconstructing runways, was placed at more than $22 million, including $100,000 for land.

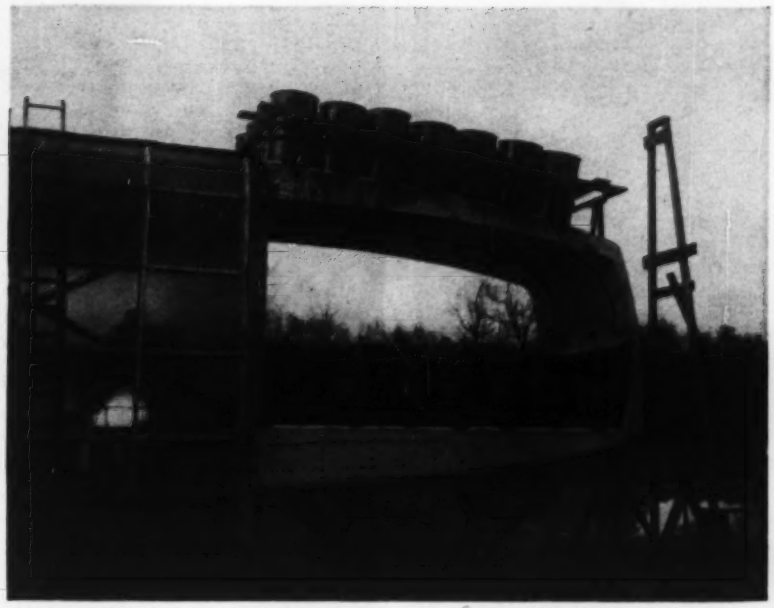
Denver's mayor immediately notified airlines that they will have to bear the entire cost of the program.

Wide World Photo

Contractors From East and West Honored

Two of construction's ablest and best-liked contractors, whose native habitats are as far apart as the Atlantic and Pacific, received the 1957 Moles Awards in New York Feb. 6. Lou Perini, president of the Perini Corp., Framingham, Mass., (left) received the member award, and Guy Atkinson, chairman, Guy F. Atkinson Co., San Francisco, (right) received the non-member award. In the picture above, Tom Walsh, Jr., president of The Moles also smiles his approval.

Both award winners were born into construction families, both have been in construction all their lives (Atkinson for 60 years), and both have built little companies into large and successful ones. How large and successful is indicated by just one current example for each: the $36 million Barnhart Island powerhouse of the St. Lawrence project is a Perini contract, while in bidding only last week the Atkinson firm was the head of a joint venture which submitted a low bid of $48,928,100, on the Bureau of Reclamation's Trinity River Project in California. (See p. 23.)



Load tests on a wing of a plastic house (left), described at an SPI meeting, verified stress calculations. Construction will start soon on the cross-shaped house (below).

Plastic House Passes Load Tests

If the house made of plastics sponsored by Monsanto Chemical Co. and to be built this spring in Disneyland, Calif., proves to be structurally sound, nobody should be surprised. For many engineering studies were made before the final design was approved.

These studies were described in a paper presented by Professors A. G. H. Dietz, F. J. Heger, Jr., and F. J. McGarry, of Massachusetts Institute of Technology, at the 12th Annual Exhibit and Conference of the Reinforced Plastics Division, Society of the Plastics Industry, in Chicago last week.

In another paper, Robert R. Keller, Keller Products, Inc., and James Ellet, KalWall Corp.–both of Manchester, N. H.–described the development of a thin panel composed of aluminum and reinforced polyester for use in exterior curtain walls. The polyester, reinforced with glass fibers, is bonded with an adhesive to the aluminum core.

Those attending the meeting also heard some figures indicative of the rapid growth of the industry. Close to 140 million lb of reinforced plastics were consumed in 1956–up 30% over 1955. Reinforced plastics for structural applications moved up vigorously, with the construction industry utilizing 16% of the total 1956 output.

• **Cross-shaped plan**–The plastic house, called by its sponsors, "House of the Future," consists a of 16 ft square core with four 16 ft square cantilevered wings. The core contains baths, toilets, kitchen, laundry and other working areas. The four wings incorporate living room, dining area and bedrooms.

Supported on a reinforced concrete foundation, the core enclosure consists of a floor, four columns and a roof and ceiling section. To meet shipping restrictions, floor and roof sections must be either two 8x16 ft pieces or four 8 ft square units.

Shipping restrictions similarly dictate that each wing be composed of two floor and two roof sections 8 ft wide by 16 ft long. The large sections take advantage of the ability of fabricators to mold plastics into big, lightweight shapes.

• **Hollow shells**–Floor sections in the wings are hollow girders consisting of an outer curved flange and flat inner flange. The outer shell extends from the foundation outward and up to meet the curved top shell of the roof section. Honeycomb cores are sandwiched between plastic facings in the floor and roof.

Sides of the wings are non-structural. If desired, they can be entirely of glass.

• **Design considerations**–In the design of this house, strength had to be considered with respect to both short-time and long-time loading. Stiffness, particularly of the cantilevers, was held equally important. And consideration also had to be given to the possibility of creep under long-time loading. All these factors affected the choice of materials, to assure adequate modulus of elasticity, and the selection of working stresses.

Since plastics reinforced with glass fiber do not yield appreciably before failure, they cannot be relied upon to distribute stress at points of concentration. Therefore, stress intensity must be kept relatively low and stress analysis must be as exact as possible to locate points of concentration.

Studies led to the selection of a polyester resin reinforced with 10 plies of a woven roving fabric. The resin-impregnated fabric was vacuum molded and oven-cured for 14 hours. It has a modulus of elasticity of about 2 million psi.

• **Loading tests**–Full-scale tests were conducted on the structural bents composing the house. The cantilevers were subjected to static and thermal loads.

Static loads were imposed, in stages, up to twice the design capability on the upper and lower halves. Maximum load on the floor section was 110 psf and on the roof section, 80 psf. Behavior of the assembly was in accordance with design calculations.

Thermal loads were produced by hot water sprays to raise the temperature of the sections as quickly as possible from 34 F to 114 F. Stresses produced were found to be within allowable limits, though of appreciable magnitudes at certain locations.

"Final proof of this unique structure," the authors conclude, "will be established only by its service performance. The various tests performed upon the materials in it and the structural elements of it, however, have done much to create confidence with respect to its ultimate field behavior."

To construct a huge dome without ribs, curved aluminum sheets are bolted together into rings at ground level and raised on a temporary mast as successive rings are added.

ERECTION of the light-gage aluminum dome starts with assembling of the uppermost panels

COMPLETED DOME is anchored to 25 piers. Short struts carry the weight from the lowest

UNDERSIDE RIGGING is used to tie down the dome against wind. Hand winches at the base of the mast lift the dome as rings are added.

Light-Gage

The roof of an 1,800-seat auditorium completed last month at Waikiki, Hawaii, is a light-gage aluminum dome spanning 145 ft.

Designed by the Kaiser Aluminum and Chemical Corp. and fabricated at the company's Permanente, Calif. plant, the dome is an assembly of diamond-shaped aluminum panels bolted together at their edges to form a rigid spherical shell, 49ft. 6in. high, it can withstand loads over 100 psf.

The 575 curved panels making up the dome have a thickness slightly more than $\frac{1}{8}$ in. They are of ten different lengths or proportions and are reinforced by an aluminum strut across the short arched diagonal.

Aluminum hub castings on the inside of the dome were used to join

at the base of the mast. Panels are laid out on the ground in order of assembly.

RIGGING dropped from the mast lifts the panels already assembled to allow others to be added at ground level. Individual units forming the rings are diamond shaped.

panels to the piers. After they were positioned, the construction mast was removed.

SHORT STRUT is pin-connected to the bearing shoe and the tip of the bottom panel extends in a channel on the shoe (arrow) to allow for movement.

Panels Form a 145 ft Frameless Dome

3-panel corners. Star-shaped gusset castings were used wherever six panels converged. They were fastened to the panels with aluminum lock-bolts. The same type of bolts were used to join the panel edges.

• **How they assembled the dome**—The foundation piers and floor of the auditorium were concreted and allowed to cure before work on the dome began. The individual panels were laid out and pre-assembled (struts were attached) at the yard of the erectors, the Terminal Steel Co., and then trucked to the job in the order of their installation.

Erection was started with the placing of a 96-ft high portable mast at the center of the dome. The first series of panels were assembled and connected around the base of the mast. These panels were later to form the uppermost portion of the dome.

Hand-winched rigging, dropped from the mast, hoisted the built-up section as each successive band of panels was added. This enabled the 3-man crews to assemble the panels at ground level. Underside rigging was used during erection to tie down the dome to withstand high wind.

The completed dome was then anchored to the 25 piers spaced around the circumference of the floor. Each pier has a 60,000-lb maximum reaction plus safety factor against wind. Struts of 2½-in. O. D. aluminum pipe carry the 39,000-lb weight of the dome into the piers. The struts connect to the dome at the lower panel joints and have a pin-end connection at the piers to allow for a 3-in. expansion and contraction. The tip of each bottom panel was seated in a channel in an aluminum bearing shoe atop the pier and can slide in and out with dimensional changes in the dome.

When anchorage was complete and the rigging dropped, dome settlement amounted to just ¾ in. Erection and anchorage was accomplished by 38 men in two 10-hour shifts.

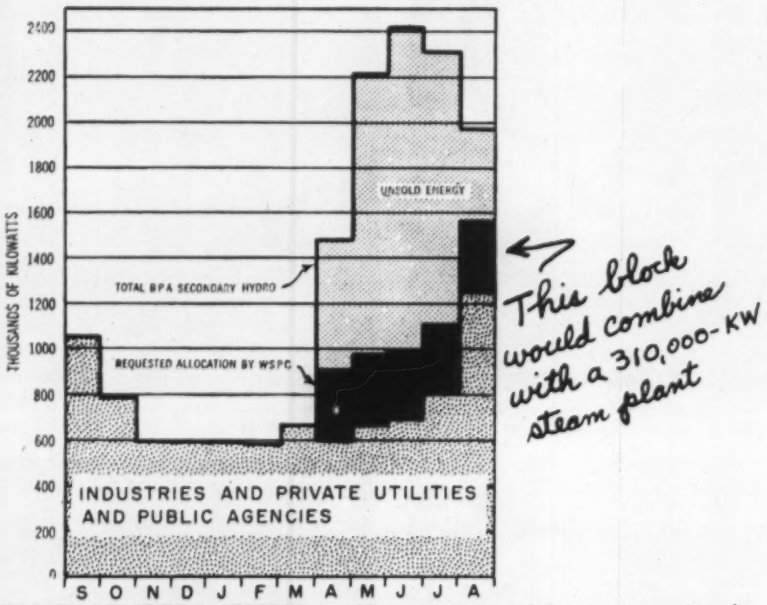
The dome was waterproofed by calking the spaces between the panels. The panel joints were covered with aluminum disks fastened and calked on the outside. The opening in the roof that remained after the mast was removed was covered with an aluminum cap raised 3 in. for interior ventilation.

Northwest Seen Ready for Steam Power

Steam plant near Seattle passes economic test; move called overdue

The long-expected move to thermal power in the Pacific Northwest has been put in sharp focus by a report, recently made available, on a proposed 312,000-kw steam plant near Seattle. In recommending early construction of the plant, the report gives a penetrating glimpse into the subtle relationships existing between thermal and hydro power in that area and how they can and should be utilized to solid economic advantage.

What is proposed is a steam plant to firm up secondary, or interruptible, hydro power now going to waste in the federal Columbia River generating system. By purchasing 320,000 kw of hydro capacity and operating the steam plant in conjunction with water power availability, the project sponsor can serve an additional firm peak load capacity of 480,000 kw and an average annual load of 290,000 kw.



SECONDARY HYDRO ENERGY would be supplemented by steam capacity when former is not available. Chart shows availability of secondary hydro power during 1959-60.

• **Less than 5 mills**—This firm power is to be sold at wholesale for just under 5 mills per kwh, the price to remain constant regardless of where power is generated or how good or bad Columbia River water conditions are. The seller, a public agency known as the Washington State Power Commission, would maintain a large operating fund to tide him over the bad years (low water and more costlier steam generation). Actual rates, estimated for current bond market conditions and subject to change slightly, are pegged at $15.75 per kw per year demand and 2 mills per kwh energy at a minimum annual load factor of 60% (which figures to 4.75 mills per kwh at the minimum load factor). These rates are competitive with new hydro power.

As a rough comparison, the 312,000-kw steam plant generating alone at 60% annual load factor would produce at about 6.5 mills per kwh (including all expenses) and would add firm capacity of only 320,000 kw or slightly more. The secondary hydro energy involved is the low grade type available between 30% and 60% of the time (and almost useless without firm-up by thermal) that is sold by the Bonneville Power Administration at a sliding rate starting at 0.4 mills.

Based on a yearly generation of 2.7 billion kwh from the combined hydro-thermal system proposed, in a typical good water year, 2.2 billion kwh would come from hydro while in a low water year only 1.2 billion kwh would be generated from water power.

• **Steam long overdue**—According to the analysis by the commission and its consultants, Ford, Bacon & Davis, supplemental steam capacity at this time makes good sense because it makes possible utilization of hydro resources now wasted and produces power at a price equal or less than that from new hydro. Sale of this power at a constant price is an attractive and significant feature since it should help utilities through the transition period between base load operation of hydro and the coming base load operation of steam plants. Finally, the report notes, only in the Northwest has there been a failure to make more effective use of hydro by the well-established supplemental steam principle.

The proposed steam plant is to be 75 miles east of Seattle, at the Roslyn-Cle Elum coal fields. It would have two turbogenerators name-plated at 156,250 kw, each served by a 1,200,000-lb/hr boiler fired with pulverized coal. Station construction cost is estimated at $50 million.

• **How hydro firmed up**—In most years, the power load that the commission contracts to serve would come from hydro during the late spring, summer and early fall. About Oct. 1, the steam plant would be started up and operated at full capacity to achieve maximum efficiency. An amount of water equivalent to the steam capacity not required would be stored in the hydro reservoirs (for which BPA will be paid). The steam-generated power so stored would be drawn down in succeeding months, thus making it possible for the commission to serve peak load requirements (480,000 kw) about 50% above steam plant rating.

Important in any project of this type is a look into the future to determine the availability of low-grade secondary hydro power (although the commission points out that the proposed steam plant could be operated efficiently on base load when that time arrives in the Pacific Northwest). One study by BPA for 1959-60, the year the steam plant would commence operation, is shown on the accompanying chart. Blocks of power at the bottom represent secondary power available 90% to 95% of the time.

Studies taking into account large storage projects such as Mica Creek and Libby, which tend to reduce the amount of secondary energy, still indicate an abundance of low-grade interruptible hydro energy.

At present, the commission and its consultants are continuing negotiations with BPA, mine owners, bond underwriting groups and equipment makers concerning the proposed steam plant. A final decision to proceed with construction has not been made.

Water Demands

Must be met by unified efforts, AWWA told

Sufficient supplies of water to meet demands of the growing U. S. economy can be provided—if more unified governmental and utility programs are developed without delay.

That was the consensus of a panel discussion on the topic: "All the Water You Want, When and Where You Want It" at the 49th annual meeting of the Indiana Section, American Water Works Assn., in Indianapolis last week.

Harry E. Jordan, secretary of AWWA, commented: "With tremendous growth of metropolitan areas water supply and sanitation cannot be developed and handled satisfactorily by individual action of the various communities politically divided by artificial boundaries.

"In many states legislative enactments have not been consummated to make it possible to develop water authorities and water districts or to permit a privately owned utility to develop service for a large area. Those legislative steps must be taken for the good of the public.

B. A. Poole, Director of the Bureau of Environmental Sanitation of the Indiana Board of Health, asserted the state has adequate water for all foreseeable uses—provided it is properly developed. He said greater cooperation at all levels of government, local, state and federal, is needed.

• **All uses considered**—More consideration for multiple-use storage projects in river basins was urged by Poole. He added:

"Increased use is limiting the water available for treated sewage effluents and pointing up the need for dilution water in order to maintain a desirable water quality. Another vital concern for the maintenance of water quantity and quality is the expanding demand for recreational water use."

M. P. Hatcher, Director of the Kansas City (Mo.) Water Department, said that his water system supplies about 100,000 customers inside the city and 50,000 customers in suburban areas outside the city. Approximately $1,250,000 of the yearly $6,500,000 total revenue comes from the suburban sales. These are made at the city's edge to 20 water districts, towns or other units, which then distribute through their own systems.

Robert O. Waller, assistant water engineer for the Chicago (Ill.) Department of Water and Sewers, said that distribution—and not supply—is the big headache for that city.

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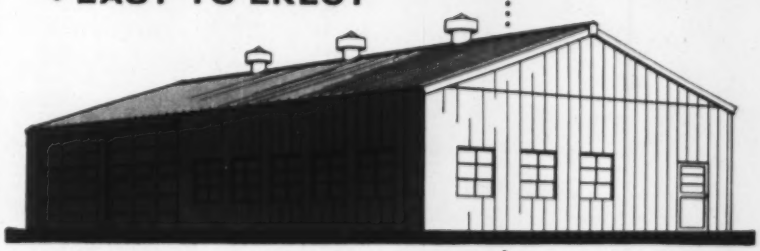

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> **Figured at 35 cents a yard, it earns an increased return of about $30 per shift or more than $600 extra each 20-day working month.**

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The design of *Independent-Travel* calls for separate power trains, separate clutches, shafts, gears and bearings for swing and travel. As opposed to ordinary machines — which have but one power train to perform both functions and therefore have these components in almost constant use — the Link-Belt Speeder with *Independent-Travel* separates the functions . . . divides total wear over two power trains. Life of shafts, clutches, gears and bearings is practically doubled.

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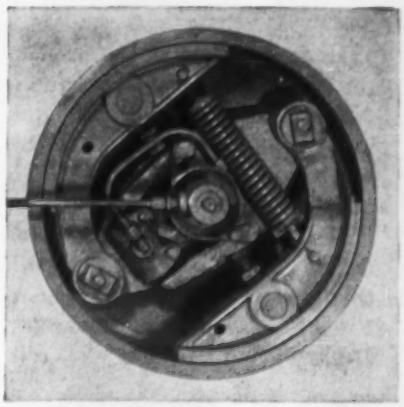

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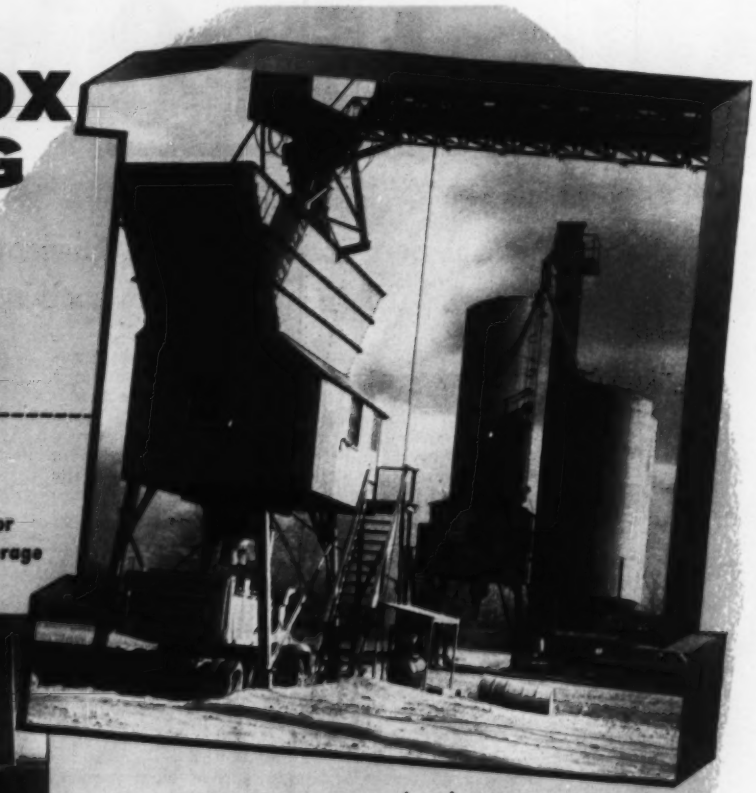

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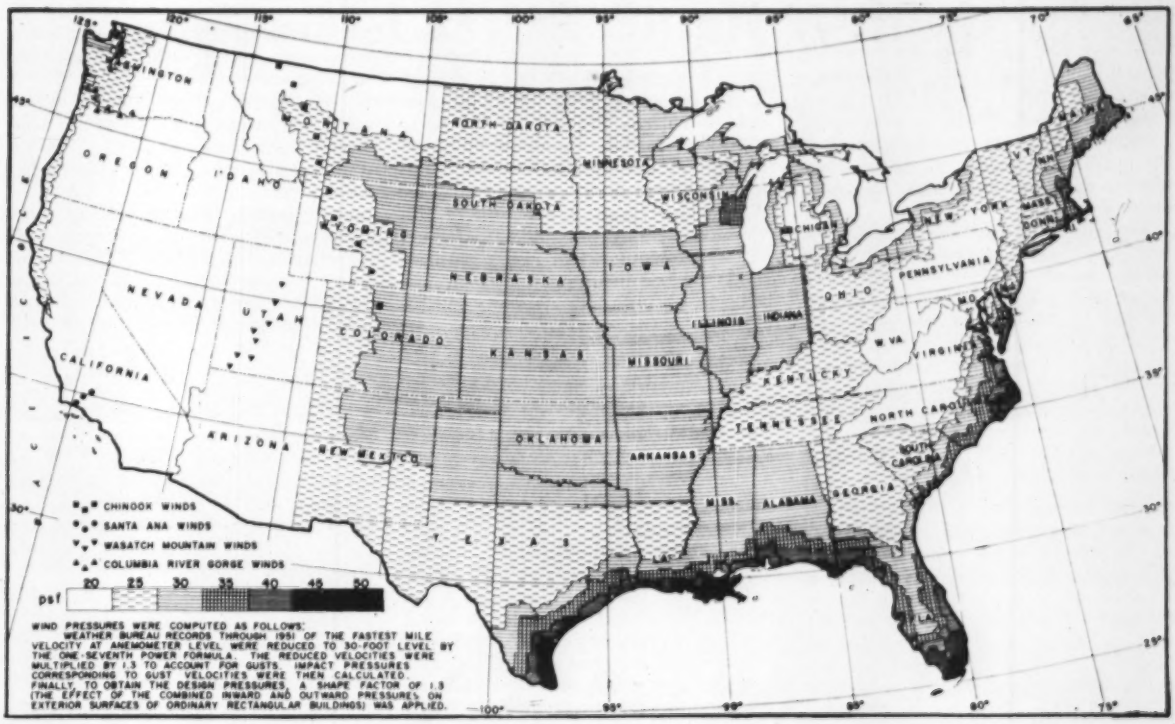

Wind-pressure map is the key element in . . .

New Standard Wind-Load Requirements

James P. Thompson
Building Technology Division
National Bureau of Standards
Washington, D. C.

Meandering hurricanes and a rash of high-tower construction have focused attention on wind loads used for design of buildings and other structures.

► Contrary to the generally accepted belief that Florida and the Gulf Coast constitute the hurricane zone of the U.S., the paths taken by recent hurricanes have shown that the entire eastern seaboard might well be considered as part of that zone. Furthermore, hurricane Hazel in 1954 emphasized that such storms do not necessarily blow themselves out shortly after moving inland but can continue with destructive force for several hundred miles.

► There has been a noticeable increase in size and number of trussed towers. This development, along with failures of several towers due to wind action, and plans for some new towers higher than existing ones, stimulated a review of recommended design wind pressures for towers.

• **Standard updated**—In the recently revised "American Standard Building Code Requirements for Minimum Design Loads in Buildings and Other Structures" (A58.1-1955), a new design wind-pressure map, an expanded table of design wind pressures and recommendations for tower design (included for the first time) constitute the most significant revisions in the standard and appendix material. (Although few changes were made in the sections of the standard in which weights of building materials and loads caused by occupancy are presented, these sections were carefully reviewed and are believed to reflect the best available information.)

Experience had revealed misunderstandings of the recommended design wind pressures in the 1945 standard, when used for design purposes and for preparing or revising building codes. These misinterpretations clearly indicated the necessity for placing more emphasis on the wind-pressure map for intelligently determining minimum wind pressures for design purposes at any geographic location in the United States.

Another tool needed is a table, for use with the map, showing the variation of design wind pressure with height above ground for the different pressure zones. Because the wind pressures shown on the new map are actually a part of the requirements, the map was included in the standard itself instead of in the appendix as in the 1945 edition.

• **Origin of wind data**—Guttorm N. Brekke, until recently a member of the National Bureau of Standards staff, made a comprehensive study of existing wind records, and in consultation with Louis P. Harrison of the U. S. Weather Bureau, developed the wind map.

As can be seen on the map, the lines separating the pressure zones are not smooth. They follow county or state lines, thereby avoiding uncertainty as to the zone to which a particular city or town should be assigned.

The pressures on the map are for an elevation 30 ft above the ground. Table 1 gives the values for variation of design wind pressure with height, for seven pressure zones.

The U. S. Weather Bureau provided the records of the monthly fastest-single-mile wind speed (the average speed of the fastest mile of wind that passes the anemometer) on which the map data are based. The bureau also supplied Local Climatological Summaries for each of the 155 first-order weather stations in the United States. These rec-

. . . How design wind pressures were chosen

ords represent an average reporting period of 39 years and include hurricanes. Tornadoes were not considered because they affect only a very small portion of a region and because it is not practicable to design many structures to withstand such high wind pressures.

The map for the 1945 edition of A58.1 was based on the greatest 5-min average speed, to which was applied a factor of 1.5 (gust factor) to account for gust speeds that are not picked up as a direct reading on the recording instrument. The 1955 edition is based on the fastest-single-mile value, which obviously is greater than the greatest 5-min average speed. Therefore, for estimating the gust speed, the gust factor need not be as large as 1.5.

After discussions with authorities on aerodynamics and from existing data on the subject, it was concluded that a gust factor of 1.3 at the 30-ft level is a reasonable one and that the factors for higher levels should be as follows: 1.14 at 500 ft and 1.08 at 1,200 ft. Gust-factor values for heights between these elevations can be interpolated as follows:

$$30 \text{ to } 500 \text{ ft} \ldots \quad 1.3 - \frac{0.16}{470}(H-30)$$

$$500 \text{ to } 1{,}200 \text{ ft} \ldots \quad 1.14 - \frac{0.06}{700}(H-500)$$

where H is the height above ground for which the factor is desired.

With a gust factor of 1.3, the velocity pressure in psf at 30 ft, is:

$$q_{30} = 0.00256 \times 1.3^2 \times V_{30}^2 = 0.00433 V_{30}^2$$

where V_{30} is the wind speed at the 30-ft level in miles per hour. Since speed increases with height and the speed, V_h, taken from U.S. Weather Bureau records was generally for some height, h, other than 30 ft, V_h was reduced to V_{30} in accordance with the one-seventh-power formula:

$$V_{30} = V_h\left(\frac{30}{h}\right)^{1/7}$$

Thus, the equation for the velocity pressure at 30 ft becomes:

$$q_{30} = 0.00433 \times 30^{2/7}\left(\frac{V_h}{\sqrt[7]{h}}\right)^2$$

$$= 0.01145\left(\frac{V_h}{\sqrt[7]{h}}\right)^2$$

Wind pressure, P, as used on the wind map and in Table 1, differs from the velocity pressure, q, in that P represents the actual force per unit of area, taking into account the effect of shape on wind loading.

Since most cases involving a wind design concern rectangular buildings, it was felt that if the standard gave wind pressures for this type of building the engineer's job would be simplified and also there would be less likelihood of errors through misuse of shape factors. Therefore, the last equation was multiplied by 1.3, the shape factor or "drag coefficient" for rectangular buildings, to obtain design wind pressure at 30 ft. This factor is the sum of the combined inward and outward factors on the exterior walls, +0.8 on the windward face and −0.5 on the leeward face. (The plus sign indicates inward pressure on the exterior wall normal to the wind, while the minus sign indicates outward pressure on the leeward wall.) It approximates the factor of 1.28 for flat plates as determined by P. O. Huss. The formula for design wind pressure, P_{30}, at 30 ft now becomes:

$$P_{30} = 0.01145\left(\frac{V_h}{\sqrt[7]{h}}\right)^2 \times 1.3$$

$$= 0.01486\left(\frac{V_h}{\sqrt[7]{h}}\right)^2$$

With the maximum recorded wind speed, V_h, known, the design wind pressure at the 30-foot level was calculated for the various stations throughout the U.S. New statistical methods for handling extreme-value data would have been applicable here, since the observations consist of maximum wind speeds. (Gumbel, E. J., "Statistical Theory of Extreme Values and Some Practical Applications," National Bureau of Standards Applied Mathematics Series 33, 1954, U.S. Government Printing Office, Washington 25, D.C.). Such an analysis could have permitted the presentation of design pressures on a probability basis—i. e., the likelihood of occurrence of extreme wind pressures —as well as for the maximum recorded wind speed, V_h. To develop the system of analysis and to process the data in this manner, however, would have caused a delay in the completion of this revision.

After a preliminary study of the pressure distribution, it was decided to have seven groups of design pressures in 5-psf increments (20, 25, 30, 35, 40, 45 and 50). The value for P_{30} was compared with the seven pressure groups, and the group closest to the resulting value was chosen as the design wind pressure for the area of that particular weather bureau station.

Variations of wind pressures with elevation were computed for the increase in wind speed with height in accordance with the 1/7-power law and with gust factors adjusted for height. These wind pressures are given in Table 1 below.

• Pressures for uncommon shapes—With these two tools, the map and the table, it is a simple matter for the designer to obtain design pressures for any particular locality in the U.S. and for any height of structure. For rectangular buildings, the design pressure can be taken directly from the table; for other types of structures, the pressure must be multiplied by the proper factor as given in the standard.

You should bear in mind, however, that the values given already contain a 1.3 shape factor. Therefore, the factors given for other types of structures will be the ratio of their shape factors to 1.3. For example, the factor for chimneys is generally given as 0.8, whereas in the new A58 standard it is 0.8/1.3 = 0.6.

• Factors for trussed towers—Another improvement in the standard is the addition of a section covering recommended factors for trussed towers.

With the advent of television and microwave communication systems, the number of towers constructed has increased in the last few years. Towers reaching heights of over 1,000 ft above the ground, either built from the ground up or built on top of existing buildings, are quite common and often

Table 1—Wind pressures for various height zones above ground[1]—psf

Height zone	In these wind-pressure-map areas:						
	20	25	30	35	40	45	50
	Design wind pressures are:						
Less than 30 ft	15	20	25	25	30	35	40
30 to 49 ft	20	25	30	35	40	45	50
50 to 99 ft	25	30	40	45	50	55	60
100 to 499 ft	30	40	45	55	60	70	75
500 to 1,199 ft	35	45	55	60	70	80	90
1,200 ft and over	40	50	60	70	80	90	100

[1] Reference should be made to the wind map and that wind-pressure column in the table should be selected that is headed by a value corresponding to the minimum permissible resultant wind pressure indicated for the particular locality in the map.

The figures given are recommended as minimum. These requirements do not provide for tornadoes.

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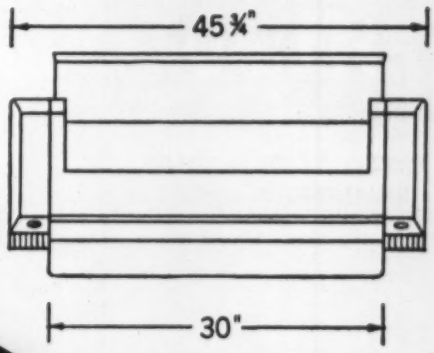

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Table 2—How Tower Factor Varies With Solidity Ratio

Type of tower	Solidity ratio	Factors		
		Wind normal to one face	Wind on a corner	Wind parallel to one face
4-cornered towers				
flat or angular sections	0.14	2.4	2.4	...
flat or angular sections	0.27	1.7	1.9	...
3-cornered towers				
flat or angular sections	0.14	2.1	...	1.6
flat or angular sections	0.27	1.6	...	1.3

areas, where they are a possible hazard to the public. (At present, the highest tower is a 1,572-ft guyed triangular tower at Oklahoma City.) In view of some of the failures that had occurred, it was deemed important to make a study of these structures while revising the standard and to include appropriate recommendations.

Unfortunately, data on the effects of wind on trussed towers are rather limited. They consist mainly of the results of wind-tunnel tests made in Great Britain and tests made in the U. S. on sections of model towers. Also, it was found that wind-tunnel tests on models of trussed bridges (without floor systems) gave results in line with those of tower models; therefore, these were given consideration in the study.

As might be expected, the factor for one tower as compared with another differs significantly, depending on the aspect ratio (ratio of length to width of a structural member), spacing of the rear face with respect to the front face, and the percent of openness—each of these influencing the effect due to the others.

• **Wind-tunnel data**—The factor for a tower is the ratio of the actual wind load to the theoretical wind load, the latter being the product of the projected area times the velocity pressure, Aq. In a series of wind-tunnel tests on single-faced models of towers, the factors ranged from about 1.5 to 1.8—about the same as obtained for individual members. For these particular models, then, the actual load on one face is about $1.7Aq$.

The factor for a tower is further affected by what is termed shielding, a condition related to the spacing between front and rear faces. Wind-tunnel tests made at the National Physical Laboratory in England show that the effect of shielding decreases as the distance between the front (windward) face and rear (leeward) face increases. The tests indicated that when the front and rear faces were close, the leeward face was, to a large extent, protected or shielded from the wind, and the total load was only a little more than would be imposed on a single face. With increasing spacing, the total load increased rapidly, until when the spacing equalled the width of the tower (square tower), further increase in spacing had little effect on the total load. In these tests, the load on a square tower was about 1.6 times the load on a single face.

It follows that the total effect would then be approximately: $1.7Aq \times 1.6 = 2.72Aq$. Since this value was derived by considering separately the two effects, it is surprising how close it is to values actually obtained from tests of complete models.

The factors for towers given in A58.1-1955 were generally obtained from results of wind-tunnel tests on models of towers and were based on the normal projected area of the members of one face, irrespective of the angle of incidence of the wind. (The area of one face is used because this is the area with which the design engineer will, in all probability, be dealing.) Therefore, the tower factor, C, is taken as the ratio of the total load (or drag) on the model to the product of the calculated velocity pressure, $q_o = 0.00256V^2$, and the area of one face of the tower.

$$C = \frac{\text{measured total drag}}{\text{area} \times q_o}$$

The coefficient, C, varies considerably, depending on the dimensions of the tower and its members. It was found that the most convenient way of expressing these factors is in relationship to the "solidity ratio" (ratio of the total normal projected area of the members of one face to the gross area of that face) of the tower.

As the solidity ratio increases, the factor C decreases. This seems logical in that the shielding is probably greater and the aspect ratio of the members smaller, thereby tending to reduce the over-all effects.

The coefficient, C, is simply the shape

Owners Agree

You Can't Beat a JOHN DEERE for Holding Costs Down

"Good work" says John Deere dealer Frank S. Oyer (left) of the job Wm. Perry, East Stroudsburg, Pennsylvania, is doing with his John Deere Crawler Tractor and Bulldozer.

Doing the job efficiently . . . on time . . . has been a John Deere tradition for nearly 120 years.

But the big feature of modern John Deere mobile work units that always brings a smile of satisfaction to the owner, is the real, measurable dollars-and-cents saving he makes in initial cost, operating cost, and maintenance.

Mr. Wm. Perry, above, for instance, is well pleased with the way the John Deere handles his light construction work and topsoil business. But he uses the word "amazed" when he talks about its fuel economy. He owns a John Deere No. 963 Trailer with hydraulic brakes for transporting the unit, and is considering the purchase of a second John Deere tractor outfit.

The John Deere "420" Crawler with loader (left) is owned by Arthur Depue, also of East Stroudsburg. This combination is used to break shale loose from its natural formation to be used for roadbed fill. It's a severe test for any outfit, but both tractor and loader are giving excellent service on this rugged work. George Brands, the operator, says he never worked with any other tractor that has the fuel economy of the John Deere. He states that he uses only 9 gallons of gas in 10 hours of continuous maximum load operation!

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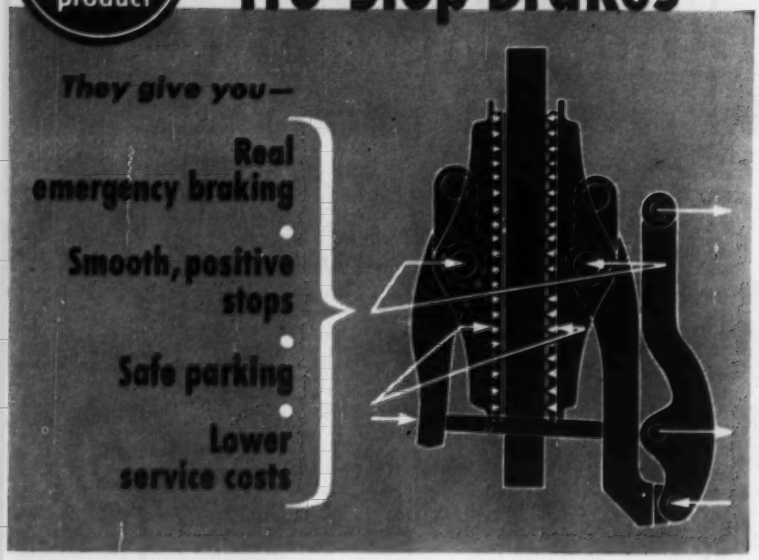

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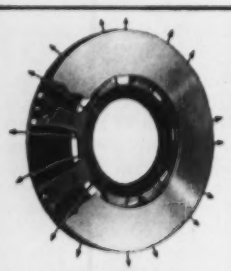

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factor for a trussed tower, just as 1.3 is the shape factor for rectangular buildings. However, C, to be used in conjunction with the wind map and Table 1, must be reduced to $C/1.3$, because the values on the map and in the table already include the 1.3 factor.

• **Recommended tower factors**—For use in the design of 3-cornered or 4-cornered towers, there are given, in the appendix to the standard, the following recommended factors to be applied to the normal projected area of the elements of one face:

Wind normal to one face of tower

4-cornered, flat or angular sections, steel or wood	2.20
3-cornered, flat or angular sections, steel or wood	2.00
Wind on corner, 4-cornered tower, flat or angular sections	2.40
Wind parallel to one face of 3-cornered tower, flat or angular sections	1.50

Factors for towers with cylindrical elements are approximately two-thirds of those for similar towers with flat or angular sections.

Wind on individual members

Cylindrical members	
2 in. or less in diameter	1.00
Over 2 in. in diameter	0.80
Flat or angular sections	1.30

Table 2 shows how the factors vary over a range of "solidity ratios" from 0.14 to 0.27.

• **Improvements in prospect**—The latest wind-speed records of each of the Weather Bureau stations for the period since the map was developed are being studied, the hope being that in some way, perhaps by producing supplementary maps, the map in the standard can be kept up to date.

During the course of this 1955 revision of A58.1-1945, there were many discussions concerning wind loads and the need for further research in this field, particularly wind-tunnel testing of model towers and studies of the characteristics of wind. The importance of applying extreme-value techniques of statistical analysis was especially recognized. It is hoped that such an analysis can be made during the period before completion of the next revision.

Metals Congress Announced

Nondestructive testing by radiography, ultrasonics and eddy currents will be among the topics covered during a week of meetings and technical sessions to be held in the Ambassador Hotel, Los Angeles, Mar. 25-29, by the Society for Nondestructive Testing. The convention will coincide with the 10th Western Metal Congress and Exposition, presented by the American Society for Metals.

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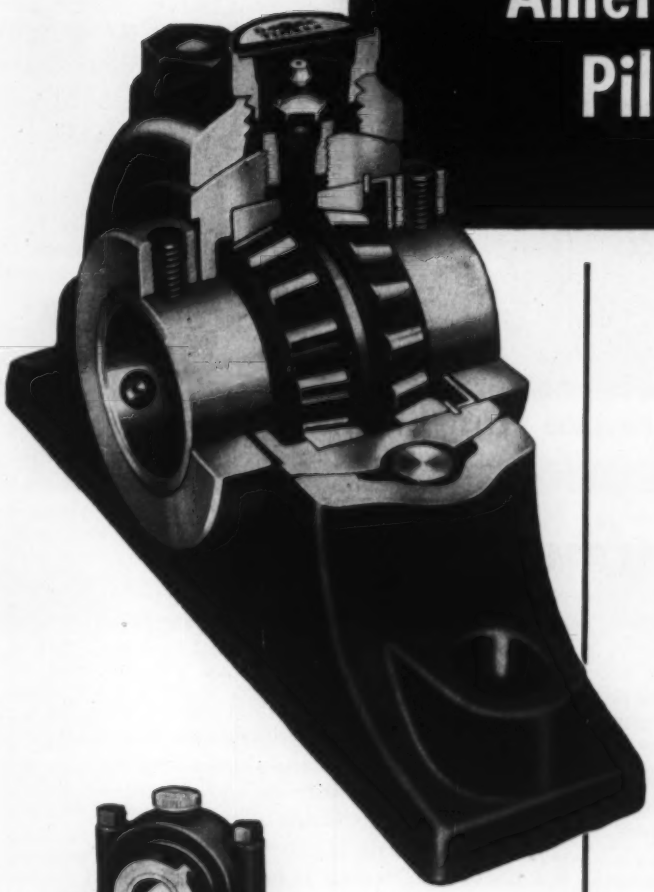

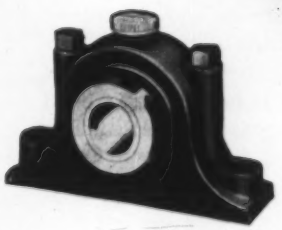

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PRESSURE-CREOSOTED timber jackets have protected the piles of the Cross Bay Boulevard Viaduct for 33 years.

WITHOUT PROTECTION these piles on the Canarise Pier disintegrated badly in a period of 11 years.

Jackets of Creosoted Wood Protect Concrete Piles

Ralph H. Mann
District Engineer
American Wood Preservers Institute
New York, N. Y.

The deterioration of precast concreted piles in the tide waters in and adjacent to New York City has been prevented for periods ranging up to 33 years by means of the placement of pressure creosoted wood jackets in the tide zone. In contrast to this record, in a structure comprising about 1,000 unprotected piles in the same tide waters, over 970 required extensive and costly repairs.

This is the gist of evidence developed by the American Wood Preservers Institute during a recent inspection of about 6,000 precast concrete piles located in structures situated in the tide waters of the south shore of Long Island. With very few and minor exceptions, the concrete piles with creosoted timber jackets in the tide zone are in very good condition.

The lumber for the jackets was pressure-creosoted for two basic reasons: (1) to protect it against decay in the above-water and in the alternately wet-and-dry area in the tide zone; and (2) to protect it against the activities of marine wood borers which infest these waters. For such protection, heavy absorptions of coal tar creosote or creosote-coal tar solutions are mandatory since no important structural species of wood grown in the United States can resist marine borer attacks when installed in an untreated condition.

One of the structures investigated was the Cross-Bay Boulevard Viaduct built in the Borough of Queens in 1923. It contained some 3,500 precast reinforced concrete piles, all jacketed with double layers of 2-in. yellow pine plank about 10 ft long, pressure treated by the full-cell process to a retention of 16 lb of creosote per cu ft.

Records reveal that these piles, 24-in. square with chamfered corners, were made of 1:1:2 concrete, and were cured 60 days before driving. The piles were painted with a bituminous paint in the tidal section before the timber jackets were installed. The jackets extend from a point 3 ft above high water through a 5 ft tidal zone to a point 2 ft below low water, and are fastened to the piles by three metal straps of ¼ x 2-in. galvanized wrought-iron secured by ½-in. galvanized bolts and nuts.

Inspection of 1,303 jacketed piles at the north end of the viaduct by Sol Kransdorf, senior civil engineer in charge of maintenance in the Office of the President of the Borough of Queens, together with representatives of the American Wood Preservers Institute, was made during periods of low tide in October, 1956. This inspection revealed that the creosoted lumber in the jackets after 33 years is still sound, and that the concrete in the jacketed zone is in excellent condition. No jackets were missing although about 30 had slipped down from 2 to 8 ft.

Three bridges on the Wantagh State Parkway leading to Jones Beach were also inspected. After 27 years, the 320 jacketed piles used were found to be in good condition. Similar good conditions were found on three other bridges on the Meadow Brook and Loop Parkways also leading to Jones Beach, where 312 jacketed concrete piles had been in service for 22 years.

In contrast, however, unprotected concrete piles in the Canarsie Pier, a structure washed by the same waters as the Cross-Bay Boulevard Viaduct, have a quite different history. Out of 1,002 precast concrete piles driven in 1925, only 28 were reported in 1955 to be in a serviceable condition. The specified mix was ¼ trass: 1 portland cement: 1¼ sand: 2¼ gravel.

Up to the present time over 97% of these 14 in. square piles have required extensive repair. In 1953, 772 of the original piles were repaired because of serious disintegration of the concrete in the tidal zone. A later contract covering the repair of 202 piles is soon to be completed for a total of 974 of the original piles.

• **Jacketed jobs**—Recognizing the need for the protection of concrete piles in tide water, Hardesty & Hanover, consulting engineers, specified creosoted jackets for the 658 precast concrete piles in the trestle approaches of the Captree State Parkway Bridge across Great South Bay on the south shore of Long Island. Southern yellow pine lumber, pressure-creosoted to a retention of 20 lb per cu ft, was used for the jackets, which were appliedf when the bridge was built in 1951-52.

Similar protective jackets were applied to the 800 precast concrete piles which carry the New York City Transit Authority's new line across Jamaica Bay to the Rockaways. This line was opened to traffic in June, 1956. These jackets consist of a single layer of 3-in. plank, which extends from 2 ft below low water up to the underside of the cap.

In repairing the 974 damaged piles in the Canarsie Pier, cited above, creosoted timber jackets were used as permanent form materials. Prefabricated in two sections the jackets were fastened to the old piles by metal bands, after which they were sealed at the bottom and at the construction joints with rubber gaskets. The jackets, thus installed, provided a 20-in. sq form in which the metal reinforcement was placed. Concrete under pressure was then placed through a pipe extending to the bottom of the form. As the concrete rose, the forms were gently vibrated, and the pipe withdrawn.

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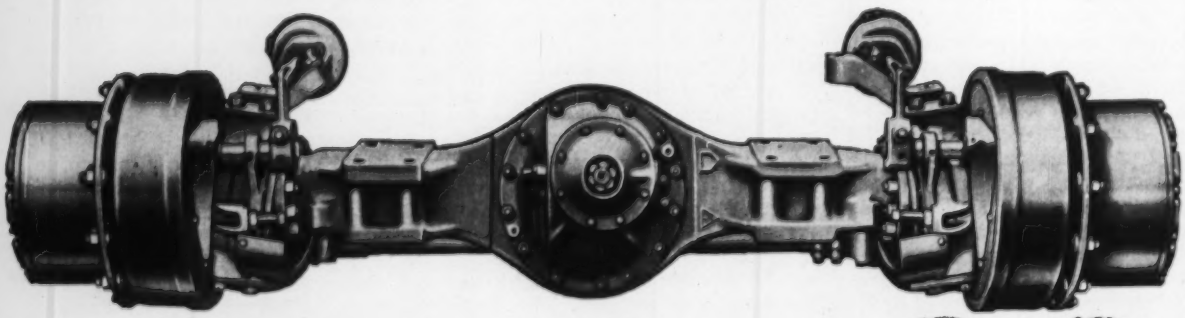

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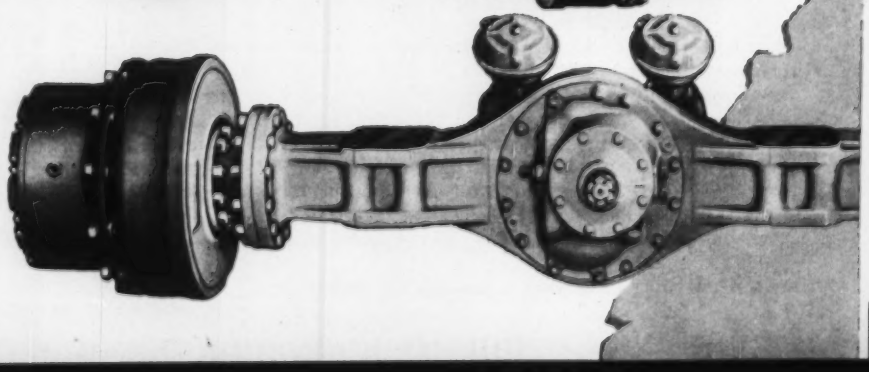

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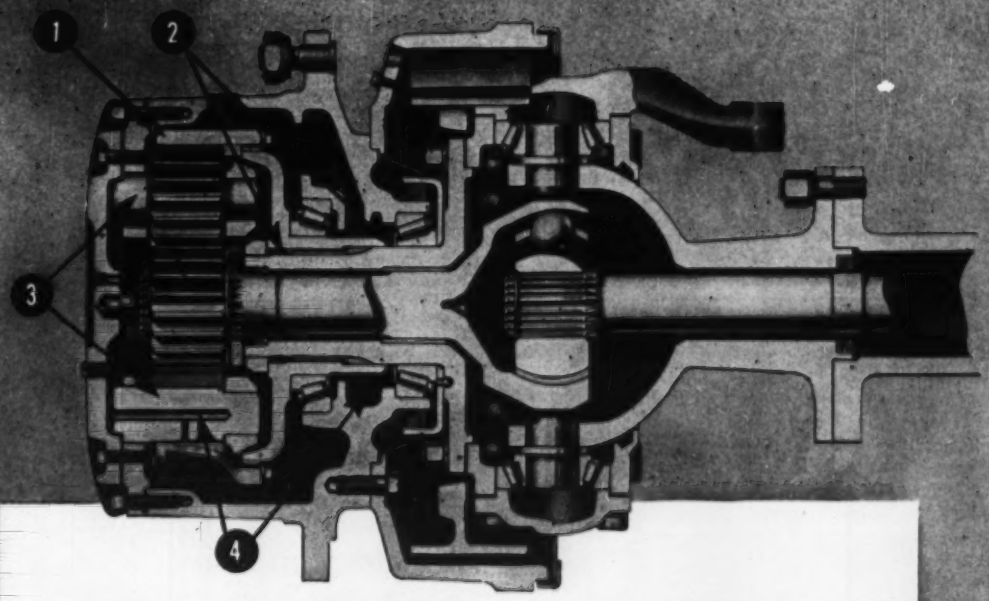

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4. **Full-Flow Lubrication** . . . Design of Timken planetary axles assures constant flow of lubricants to wheel bearings and all planet gears while vehicle is in operation. Wheel hub and planetary spider pick up oil in the cast reservoirs as they rotate and channel it to wheel bearings and pinions. When vehicle is not in motion oil is retained in these chambers providing ample initial lubrication for all moving parts.

5. **High Degree of Parts Interchangeability** . . . Important to service and operation is the high degree of parts interchangeability between both rigid and steering axles in the same planetary series. This means a smaller parts inventory, low maintenance costs and more productive time with Timken planetary axle equipped vehicles.

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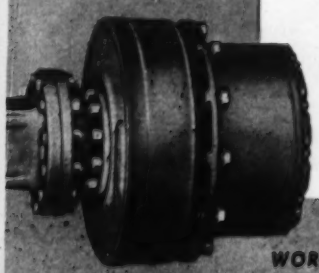
For complete information on the TDA family of planetary axles—write Timken-Detroit Axle Division, Detroit 32, Michigan . . . or visit the TDA display at Booth No. 364 at the 1957 Road Show—Chicago Amphitheater, January 28th through February 2nd!



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The Project Manager at Shippingport answers the question . . .

What's Different About Building Atomic

William J. Grady
Burns and Roe, Inc., and Associates
Shippingport, Pa.

Building the nation's first utility nuclear generating station has presented many new problems—a new brand of situations that have been solved by rather unorthodox methods.

As a prime example, the roof or top slab of the vapor container enclosure is concrete, 5 ft thick. This slab is some 60 ft above the base and could not be supported by the vapor container itself. To support freshly placed concrete of these slabs on conventional forms would have taken massive falsework. Instead, precast roof sections, 2 ft thick and weighing 10 to 20 tons were constructed. After curing, they were hoisted into place, with a maximum clearance of 1 in. when placed on the previously poured wall and haunch sections. After grouting into place, these precast slabs became, in effect, forms for the additional 3 ft of concrete necessary to make up the total thickness.

Precast slabs were used in all areas of the roof of the container enclosures, except where either numerous or large openings through the concrete were required. In these cases, it was necessary to cast the entire 5-ft-thick sections in place on conventional forms. But these forms were supported by a system of overhead falsework, consisting of 36-in.-wide flange beams and a forest of hanger rods.

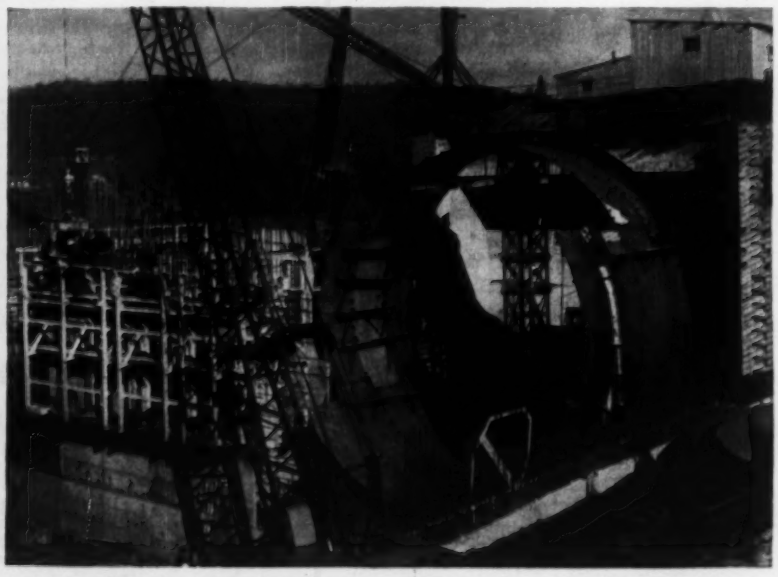
Precast beams 2-ft thick . . .

. . . Placed side by side spanning

Difficulty in procuring steel for this falsework led to arrangements with the U. S. Army for the use of Bailey bridges, in addition to such rolled sections as were available. The Bailey bridging worked extremely well, despite its flexibility, and the top slabs of the vapor containers were poured without undue delay.

A second unusual feature of the Shippingport Atomic Power Station is the large amount of reinforcing steel that has gone into it. No. 11 bars were used almost throughout, and to such an extent that the average slab will show approximately 200 lb of steel per cu yd of concrete (compared with the normal ratio of 80-90 lb per cu yd). The total concrete estimated for the completed plant is 50,000 cu yd, with about 5,000 tons of reinforcing steel to be used.

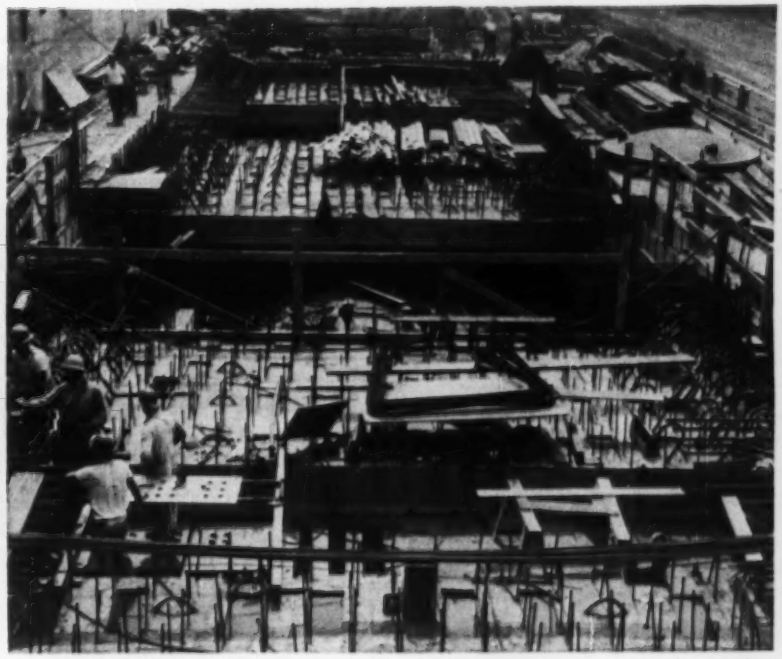
DENSE REINFORCING—Steel averaged 200 lb per cu yd—mostly in #11 bars.



HEAVY WELDNG—Four vapor containers, including this one, totals 22,000 tons of steel—7 tons figures to be weight of welding rods alone.

Power Plants?

vapor container . . .



. . . Become forms for and a part of 5-ft-thick roof.

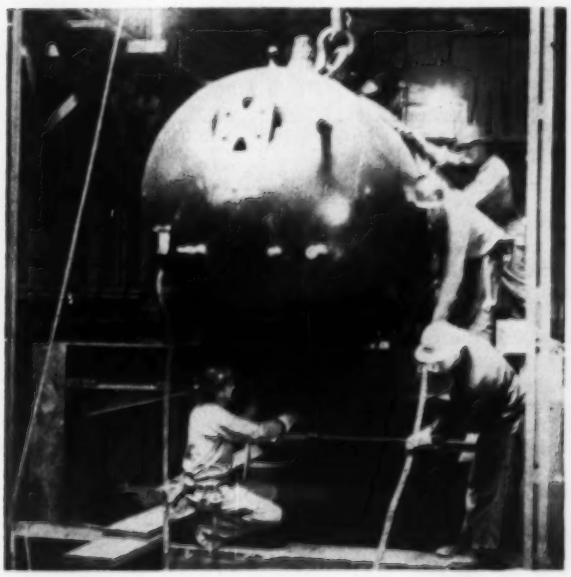
• **Winter concreting** — An extremely tight schedule was set up and has been followed from the start of construction. To maintain progress, concreting proceeded throughout the past winter. To prevent freezing and to provide adequate curing, a low-pressure boiler was brought in, and saturated steam was piped under canvas enclosures over all the fresh pours.

Forms for all concrete work performed by Burns and Roe, Inc., and Associates were fabricated on the job. Forms were of the cantilever type used in concrete dam construction. Lacquered plywood for the face of forms minimized the problem of finishing concrete.

Concrete pours averaged 8 ft in height. The normal pour was 30 ft long and 5 ft thick, with shrinkage blocks approximately 10 ft long. The minimum time between adjacent pours was 72 hours. All joints were waterstopped with an intricate system of rubber dumbbell waterstops.

Shortly after the foundation slab for the turbine room was cast, spring floods came, and the Ohio River rose to 23 ft above normal pool level. A temporary dike was constructed between the screenhouse and the plant proper, permitting work to continue in this area. However, during periods of high water it was necessary to suspend temporarily construction in the screen house area.

Water presented another problem, earlier. Excavation for the turbine room foundation uncovered a 15 ft blanket



SPECIAL PRECAUTIONS—Steam drum being installed in vapor container is viewed through air lock opening, its only access.

HEAVY LOADS—Dravo Corp. installs the reactor vessel, a 153-ton hoist. Lots of heavy pieces went into this plant.

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Who Is Doing What at Shippingport

Atomic Energy Commission—Specified reactor properties, asked industry to bid for permission to build the first plant. Also supervised design of the nuclear section.

Duquesne Light Co.—Successful bidder. Supplied the site, and agreed to invest $5 million in the nuclear portion of the plant. Also agreed to purchase steam from the AEC at stipulated rates, and to design and underwrite the turbine-generator section. The entire station will be operated by the Duquesne Light Co.

Burns and Roe, Inc. and Associates—Agent-constructors for the Duquesne Light Co., building all of the conventional section of the plant and the structure housing the reactor. Also has helped in certain phases of plant design.

Westinghouse Electric Corp.— Designed the reactor.

Combustion Engineering Inc.— Designed and built reactor vessel.

Dravo Corp.—Installing piping and equipment in the nuclear portion of the plant.

Stone & Webster Engineering Corp.— Architects-engineers for the Westinghouse reactor systems, and some of the auxiliaries.

J. Rich Steers; Haetzel & Buehler— Part of the group known as Burns and Roe, Inc., and Associates.

of wet clay. It was excavated and some 25,000 cu yd of gravel were used to back-fill, providing adequate support for the 12-ft-thick turbine room mat.

• **Shielding**—Every bit of the nuclear portion of the plant is to be doubly encased for safety.

The reactor, the boilers and the auxiliaries are enclosed in steel containers made of SA 201 Grade B firebox plate, varying in thickness from 0.66 to 1.25 in. Near penetrations, the skin of the container was increased, up to 3 in. in a single thickness (no double plates) to provide the necessary strength. Welding was closely supervised, then all seams were thoroughly radiographed to detect any defective welds. There are four such steel containers. The boiler containers are 50 ft in dia and 97 ft long; the auxiliary container is 50 ft in dia and 147 ft long; and the reactor sphere is 38 ft in dia.

Each steel container is further enclosed and therefore shielded by a concrete structure, with walls and roof 5 ft thick. The supporting slab for these structures is 7 ft thick.

Connections between the boiler containers and the auxiliary container are 8 ft in dia; between the boiler container and the reactor 3½ ft; and between the reactor and the auxiliary container, 12 ft in dia. In effect, then, this creates one giant pressure vessel, designed to contain all of the steam that might be generated if all water in the primary coolant loops (at 2,000 psi) were to flash into steam. There are 600,000 cu ft of volume for such emergency purpose. Calculated pressure, after such flashing, would be about 53 psi, and these vessels were tested up to 70 psi.

The plant's capacity is 60,000 kw, obtained by operating three of the four steam generators. The plant's single turbine-generator has a maximum capability of 100,000 kw, to allow for possible improvement in heat energy output. If any one steam generator has to be shut down for maintenance or repairs, access to it is possible, after a suitable cooling-off period, without running risk of radiation exposure from the others. Although two steam generators are enclosed in each "boiler" container, a 4 ft shielding wall down the middle separates them, making entrance to either independent of the other. To get in, however, the operators will have to pass through an airlock so designed that the inner door cannot be opened until the outer door is shut. The weight of each airlock is 8 tons.

On Labor Day, 1954, President Eisenhower made history by waving a wand which, by remote control, started the first bulldozer on the Shippingport site. Full-scale construction activity started in March, 1955. Now after nearly two years, in which some new construction problems were met and solved, "Shippingport" is almost a reality.

Plant Statistics

Name-plate rating of plant: 60,000 kw
Maximum capacity: 100,000 kw
Number of boilers: four (two B & W two Foster-Wheeler)
Reactor type: Pressurized water
Water (reactor-coolant) Pressure: 2,000 psi
Steam conditions: 600 psi, Saturated: 987,350 lb per hour
Container sizes: Reactor, sphere, 38 ft
Boilers, cylinders, 50 ft in dia
97 ft long
Auxiliary, cylinder, 50 ft in dia
147 ft long
Container weight, total: 2,200 tons
Concrete used: 50,000 cu yd
Reinforcing steel used: 5,000 tons
Earth moved in clearing site and grading: 250,000 cu yd
Excavation: 90,000 cu yd

THREADED RODS

Bethlehem Threaded Rods come in two types: cut-thread and rolled-thread. Cut-thread rods are made plain or upset, in thread diameters up to 4½ in., and in varied lengths. Rods with rolled threads are also made in various lengths. They come in thread diameters up to 1½ in.

Both types of rods can be furnished straight or bent, in single or multiple units, either asphaltum-dipped or hot-dip galvanized.

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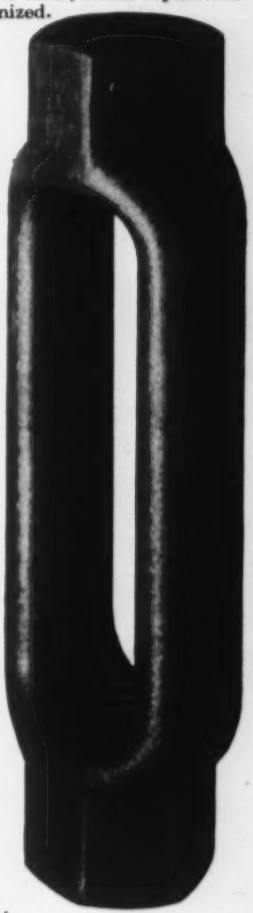
Bethlehem produces the fasteners shown here in a full line. In addition, we make many other types of construction fasteners, all of them in a full size range. If you would like to have detailed information about the types of fasteners needed in carrying out your construction schedule, just get in touch with the nearest Bethlehem sales office.



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Made in diameters from ⅜ in. to 2⅝ in., with 6-in. openings between the heads. Also come with 12-in. openings in diameters from ⅝ in. to 1½ in. Hexagon ends, right- or left-hand threads, and stub ends, if desired.

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Bethlehem Clevises come in sizes from ⅞ in. to 2¼ in., threaded to American Standard Coarse-Thread Series, Class 2. Furnished with right- or left-hand threads, with stub ends, or with pin and cotter.

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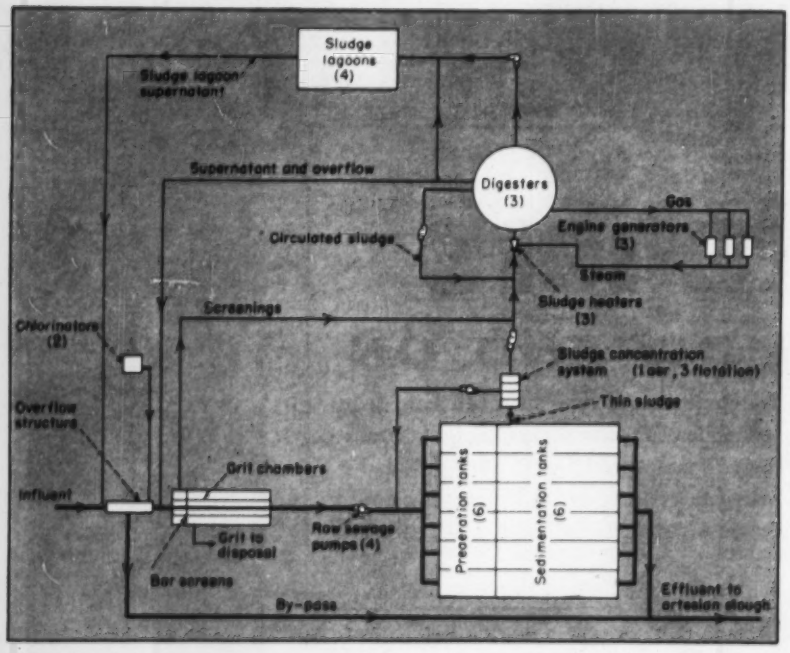
SETTLING AND AERATION TANKS at San Jose, Calif., can be arranged to provide either primary or modified activated sludge treatment, depending on flow.



PRIMARY layout is shown. For secondary treatment, some of sedimentation basins become primary settling tanks, preaeration tanks become aeration chambers. It's a . . .

Two-Process Sewage Plant

One of the final steps toward ending pollution of San Francisco Bay was taken this month as San Jose, Calif., placed its new and different $3.5-million sewage plant in service.

The treatment works serves a number of large canneries and a present population of 160,000 dispersed over a large service area. The canneries are mentioned first properly—during the canning season sewage flow averages 34 mgd, compared to 12 mgd during off-season. This complicated the situation and prompted an unusual plant design.

The city's consulting engineers came up with a novel design allowing two processes through the same plant. During the canning season, sewage will receive primary treatment—preaeration and settling—as shown above.

When loading becomes light enough, primary effluent will receive secondary, or modified activated sludge, treatment. Raw sewage pumps located after the grit chambers will discharge flow into either two or three of the sedimentation tanks for primary settling. Effluent from these tanks will flow into the preaeration tanks, which will function as normal activated sludge tanks. Finally, sludge will settle out in either three or four of the sedimentation tanks, then operated as secondary units.

Design data for the aeration and sedimentation tanks are shown below. At the 34-mgd primary treatment design loading, suspended solids average 570 ppm and 5-day biochemical oxygen demand 1,100 ppm. Solids and BOD are expected to be reduced by 75% and 17%, respectively. For the 12-mgd loading suspended solids average 300 ppm and the 5-day BOD is 420 ppm. Reductions of 70% and 24%, respectively, are expected.

• **Other units in plant**—Plant influent flows through four bar screens, each with ¾-in. clear opening between bars, and four 9x85-ft grit chambers.

At present, sludge from the sedimentation tanks is concentrated from 1% to 4.5% solids in a sludge aeration tank and three 10x18-ft flotation units, designed to handle an fluent of 1.5 mgd. There are three floating cover type sludge digesters 100 ft in dia with 30-ft side water depths capable of handling 123,000 lb of dry solids per day.

Sludge is discharged to four lagoons providing 3.1 million cu ft capacity, or enough for eight years of operation.

Charles G. Hyde of Berkeley and George L. Sullivan of Santa Clara were consultants for functional design of the San Jose plant. Brown & Caldwell, San Francisco, prepared the engineering design, with F. M. Belick serving as project engineer during construction.

Walsh Construction Co., San Francisco, and E. V. Lane Corp., Palo Alto, held a $2.8 million general contract.

Harold J. Flannery is city engineer of San Jose.

Design Data—Aeration Tanks

Number	6
Dimensions (ft)	34x70
Avg. water depth (ft)	14.5
Max. hydraulic cap. per tank (mgd)	10.8
Air supplied (cu ft per gal of sewage)	
as preaeration tanks (@ 34 mgd)	0.15
as activated sludge aeration tanks (@ 12 mgd)	0.42
Detention time (hrs)	
as preaeration tanks (@ 34 mgd)	1.1
as activated sludge aeration tanks (@ 12 mgd with 6 mgd return)	2.2
Sedimentation Tanks	
Number	6
Dimensions (ft)	34x150
Avg. water depth (ft)	10
Max. hydraulic cap. per tank (mgd)	10.8
Detention time (hr)	
as primary process (@ 34 mgd, 6 tanks)	1.61
as activated sludge (@ 12 mgd.)	
2 primary tanks	1.53
3 primary tanks	2.59
3 secondary tanks	2.29
4 secondary tanks	2.04

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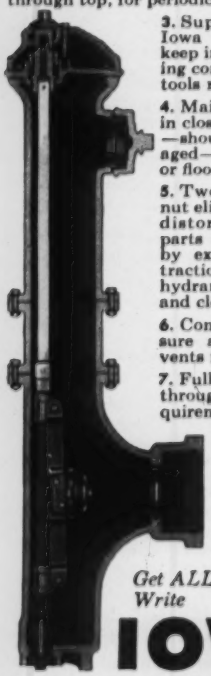

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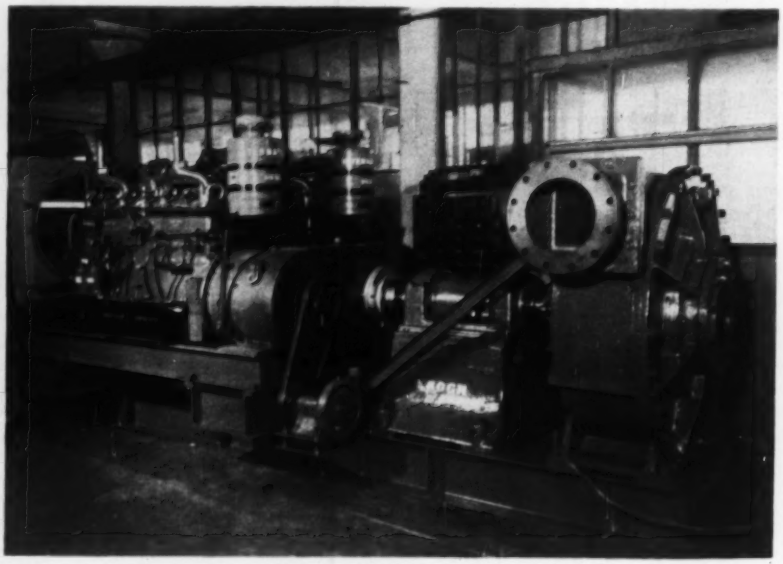


Heavy-Duty Dredge Pump Is Full-Lined

Krogh's new 12-in., heavy-duty dredge pump comes complete with twin diesel power unit, is portable and, claims the maker, is the only full-lined dredge pump built on the West Coast.

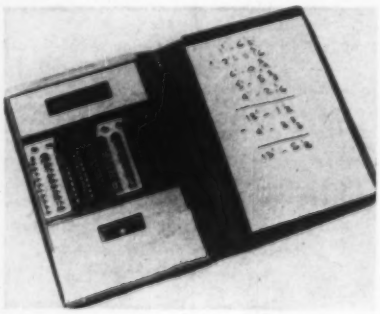
According to the manufacturer, the pump:

- Can handle more than 5,000 gpm of mud, sand, gravel and water.
- Will move more than 200 cu yd of dry material per hour.
- Can pass rocks up to six inches.

The heart of the suction dredge combination consists of a 12-in. heavy-duty dredge pump, made by Krogh, equipped with hardened replaceable metal liners made of Ni-Hard or nickel iron. The pump is powered by twin International Harvester diesel engines, Model UD-1091, rated at 380 hp naturally aspirated and 500 hp turbocharged. The engines run at 1,400 rpm and are reduced, by an Alamo Compound series 450 reduction unit, to an output shaft and pump speed of 700 rpm.

Built for heavy duty and rough service, the pump is heavily constructed and especially braced; heavy ribs and thick metal are used in the case. Pump and engines are assembled on a unit type base for rigidity and portability. Wear adjustment take-up is accomplished without the necessity of dismantling the pump or piping.

The new pump has been installed in a dredge and is working at a channel and harbor cleanup in California involving the moving of 850,000 cu yd of material. KROGH PUMP & EQUIPMENT CO., INC., 515 HARRISON ST., SAN FRANCISCO, CALIF.



Pocket Adding Machine Gives Direct Readings

A German-made automatic adding and subtracting machine counts up to 100,000.00 in decimal amounts, adds and subtracts feet, inches and fractions of an inch including sixteenths, according to its distributor. The dealer also states that it is not necessary to convert dimensions into decimals and reconvert the result—dimensions are added or subtracted as they come, and the result is also direct, expressed in feet, inches and fractions.

Addition is done on one side of the Fractomator and subtraction on the reverse side. For outside work the

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57

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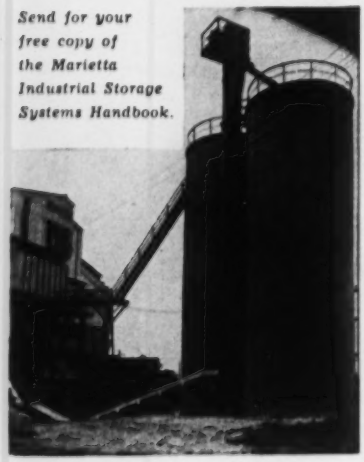

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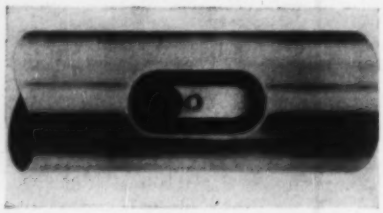
machine is fitted in a leather case with notebook, weighs 1 lb and measures 5x7x¾ in. USA Alexdraft Equipment Co., 159 N. Daisy Ave., Pasadena, Calif.

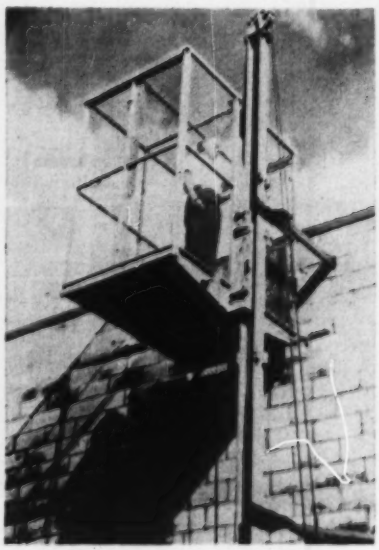


Irrigation Pipe Slide Valve Has Graduated Frame

A slide valve, developed to replace metal gates, for irrigation pipe has a neoprene frame with graduated markings. The markings on the face of the frame permit settings for each furrow, adjustable for watering conditions desired.

Gate area of the valve is equivalent to a 2-in. round opening, and the valve units are completely recessed within the pipe to eliminate damage during handling or storage.

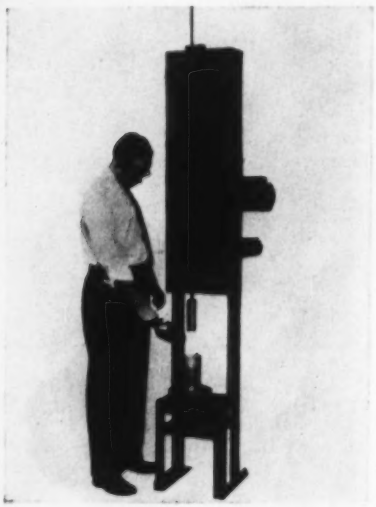
The units may be installed on one or both sides of the pipe and at any spacing. W. R. Ames Co., 150 Hooper St., San Francisco 7, Calif.



Demountable Elevator Is Semi-Permanent Lift

A demountable elevator developed by Hawkeye Products Corp. is aimed to replace the permanent elevator installations that some states require for the transport of personnel on construction jobs and other extended projects. It is said to be easy to set up and operate and can be quickly disassembled.

Operating on a vertical monorail, the elevator has a capacity of 2,000 lb and can be used at almost any height if the monorail is fastened to the building every 15 ft. It can be mounted either outside or inside a building. The hoisting machinery is enclosed in a locked housing for protection from dirt and weather. Hawkeye Products Corp., Syracuse 4, N. Y.



Laboratory Soil Compactor Eliminates Hand Work

A new mechanical soil compactor climinates tedious hand compaction processes and produces uniform results with a considerable saving of time, claims the manufacturer. Occupying a floor area only 15 in. square, the self-contained tester is powered by an electric gear transmission drive, requiring only a plug-in to an electrical outlet.

The drop hammers are automatically picked up after each contact with the soil and lifted to the exact 12-in. or 18-in. height for the next drop. A counter registers the number of blows per compaction layer and can be preset to stop the hammer operation at a specified number of blows. The soil mold is automatically indexed to a new position after each blow.

The compactor is easily adaptable for the interchange of the standard 5.5-lb (12-in. drop) and the modified 10-lb (18-in. drop) hammers for performing compaction tests in accordance with AASHO and ASTM specifications. The machine also may be adapted for compacting in a 6-in.-dia California Bearing Ratio mold by using a specially designed pie-shaped foot hammer. Soiltest, Inc., 4711 W. North Ave., Chicago 39, Ill.

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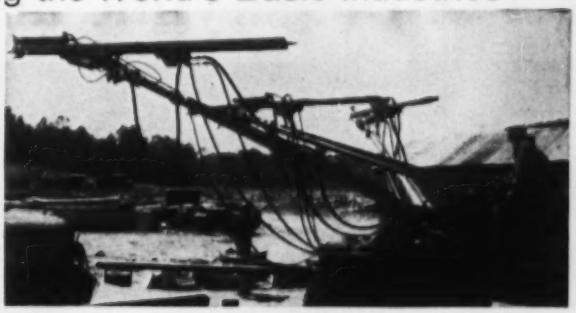
Self-propelled "Air Trac"® drill for rough terrain.



Hydraulic booms and remote-controlled drills for mounting on tractor truck or half-track.

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Field and Office

INSULATED COVER protects prestressed concrete beams from near zero temperatures. Tarpaulin sides are temporarily thrown up on cover during casting operations.

One Way to Beat the Cold

Concrete beams are being cast and stressed at a Calgary, Alberta, plant in spite of sub-freezing temperatures. Making such winter operations possible is an insulated cover system consisting of steel joists, metal encased fibrous glass insulating panels and tarpaulin sides.

This system was developed by Precast Concrete, Ltd., of Calgary under the direction of George Adam, plant manager. It has permitted the plant to continue production in near zero temperatures of large post-tensioned concrete beams for construction jobs in the Calgary area.

The insulated covers are top-supported by long-span steel joists 16 in. deep and 24 ft long. The joists are spaced at about 10-ft intervals. Welded to the bottom of the joists at right angles and on a 3-ft spacing is a series of inverted 1½-in. T sections. Between these members are slid prefabricated insulated panels measuring 3x10 ft.

The panels consist of a 1-in. thickness of fibrous glass insulation, which is wrapped in 22-gage galvanized metal fastened with metal screws. These panels can be stripped from the frames and then used on various other projects.

Underneath the panels are runners something on the order of sled runners that raise the bottom of the assembly about one foot. Thus, when the insulated cover is resting on concrete beams it will be held above reinforcing steel and inserts that might protrude above the concrete surface. Attached to the edge of the insulated cover are tarpaulins that complete the housing.

At the beginning of a day's operation, the tarpaulins are folded back onto the cover. The assembly then is pushed back toward previously-poured beams, thus exposing the last beam cast the previous day. Forms then are stripped from this beam and set up about 4 ft away. Heated concrete is placed in the metal forms with the top finished in the best possible manner subject to the outside temperature. The trusses with the insulated covers then are pushed forward and the exterior tarpaulins dropped down to protect the freshly-poured concrete against freezing. Sufficient live steam is injected underneath the cover to assure a minimum temperature of 70 to 80 F while the covers remain in place.

When the beams are about five days old the strength has come up to about 5,000 psi. Prestressing cables then can be placed in the girder. After stressing and grouting, the beams remain under the insulated coved for another two days or more.

The poured-in-place end block that covers the anchorage cones is cast either the same day grouting is completed or early the next day.

According to the developers, the saving in steam as well as the ease in handling of the insulated covers makes this procedure economical in pouring concrete beams of large size in temperatures substantially below freezing.

(F&O continued on page 56)

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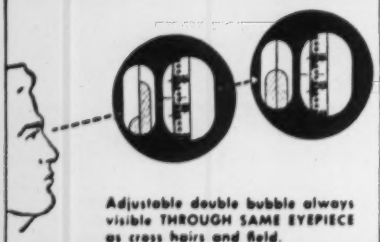

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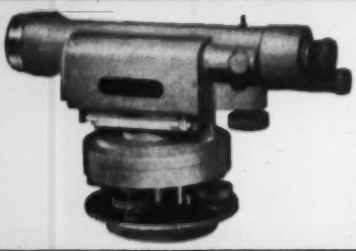

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NAME.....

ADDRESS.....

WORKERS place first 30-ft anchor bolt to prevent rock slides at Mayfield site. Railroad trestle in background marks the location of dam.

Longest Rock Anchor Bolts Ever Used

Rock anchor bolts 30 ft long, believed to be the largest ever manufactured, have been installed in a cliff above the Cowlitz River near Mayfield, Wash., to help prevent rock slides from obstructing the river. This is the site where Tacoma City Light is constructing a dam under terms of a court order which insists that the river be kept clear for the passage of fish. The bolts also safeguard men working on the cliff.

The installation consists of 21 1½-in.-dia bolts, accomplished by a five-man crew of the Arundel Corp. and L. E. Dixon Co., joint contractors for the $37.1-million hydroelectric project. Normally, rock anchor belts are furnished in lengths of 2 to 10 ft, usually with a 1-in. nominal diameter.

SUSPENDED working platform is used to install rock bolts on sheer cliff sides.

Technique of Using Stud Welding Speeds Bridge Job

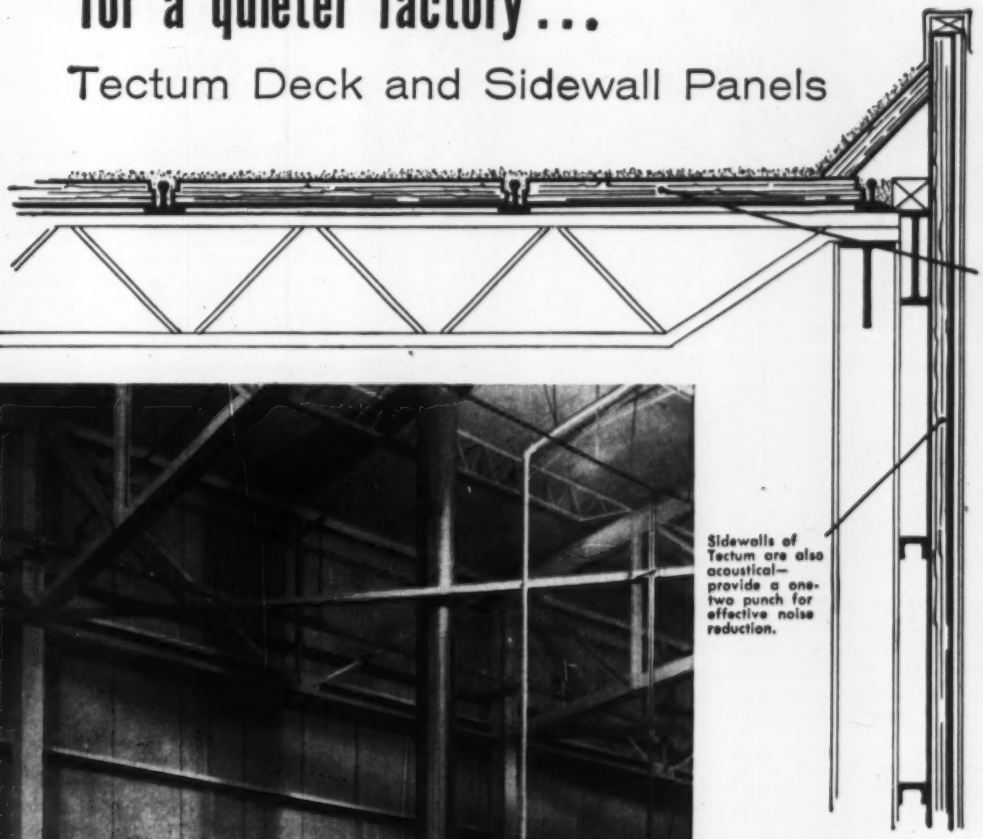
Use of headed shear connectors, installed in the field with a stud welding gun, enabled contractors working on an eight-mile section of the Florida Turnpike near Stuart, to halve the time normally required for erection of composite bridge decks.

On five bridges erected by the Montgomery Construction Company, a welder and a helper installed the 720 studs that were required for each complete 50 foot span in approximately two hours time.

Carpenters first erected forms for the deck over one span, to provide a ideal working surface for the stud welders, who were followed in turn by the reinforcing crews. As they moved on to the next span, the concreting began, thus completing one 50 foot span per day.

for a quieter factory...

Tectum Deck and Sidewall Panels



Roof decks of Tectum absorb sound, are structural, insulating and noncombustible.

Sidewalls of Tectum are also acoustical—provide a one-two punch for effective noise reduction.

When two of the three reflecting surfaces within busy factories become sound absorbing acoustical control systems, noise and confusion are effectively reduced. Tectum Roof Deck Planks and Tectum Sidewall Panels are an ideal combination — homogeneous and functional, eliminating the need for further acoustical materials in your basic structure. And Tectum offers many other advantages in appearance, ease of erection and versatility of application. More and more plants are taking advantage of Tectum's dual benefits for new plant construction. Have you investigated acoustical, structural, insulating, noncombustible Tectum for sidewall applications? Send today for a new eight-page catalog No. C-100-A. Tectum Corporation, 107 South Sixth Street, Newark, Ohio.

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For Quieter Working Conditions and Greater Job Efficiency.

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CORPORATION

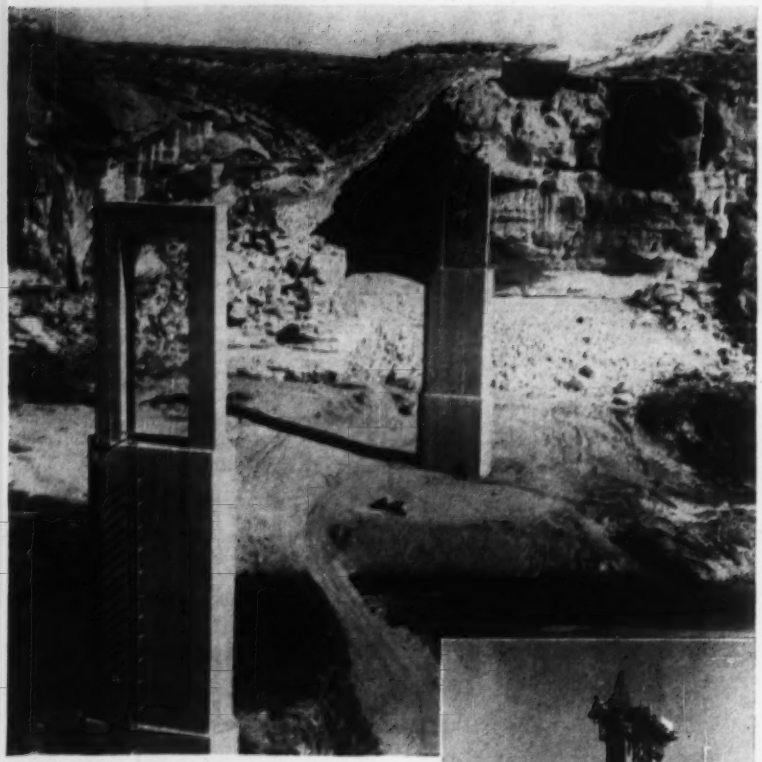
Texas Outwits an Outlaw

Hydraulically-jacked slip-forms raise monolithic piers a safe 210′ above bad-acting Pecos River

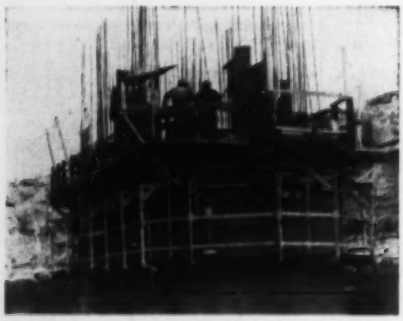
ON U. S. HIGHWAY 90, near Langtry, Texas, where Judge Roy Bean pronounced rough Western justice and tender homage to the "Jersey Lily", Texas has built a "sky-high" span to lick the outlaw river that washed-out 2 lower-level structures in two successive years.

The new 1,310′ long deck truss cantilever bridge is supported on 210′ monolithic piers which were poured with slip-forms hydraulically raised by one man. Concrete of 3″-4″ slump was placed in layers 2″ to 4″ deep and hand puddled. The seepage of excess water eased upward movement of the slip-forms.

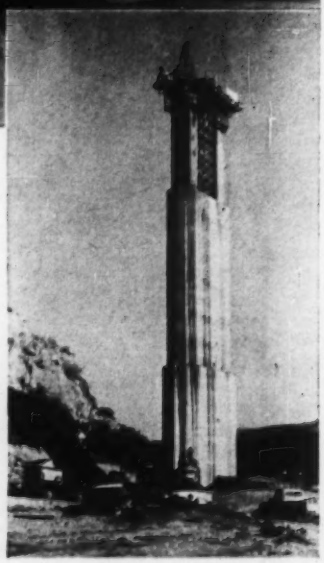
A 1″ jacking cycle averaged 1½ minutes. Use of 150° mixing water reduced concrete set-up time 20%, making possible a rate of placement as high as 11″ per hour and never less than 5″ per hour. In 20 weeks, 5,600 cu. yds. of Class A, 5-sack mix structural concrete were placed. Properly processed material and on-site deliveries paced to hourly progress were provided by truck mixers of certified design, capacity, mixing speed and water control accuracy.



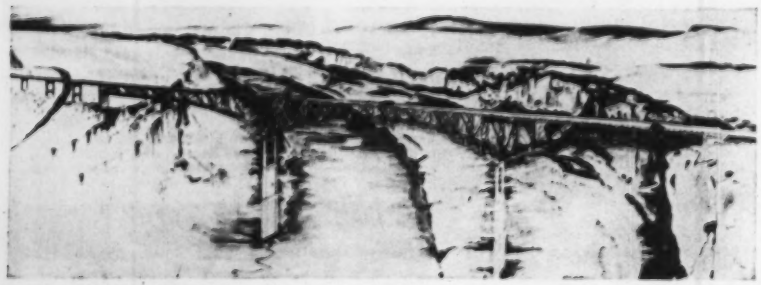
COMPLETED 210′ high reinforced concrete piers for Pecos River Bridge near Langtry, Texas. Designed under supervision of D. C. Greer, state highway engineer, Texas State Highway Department. Randle B. Alexander, bridge engineer. Whittle Contracting Co., Dallas, Texas, contractor, B. M. Heede, Inc., Long Island City, N. Y., consultant.



SLIP-FORMS start up bottom section of a pier. Three forms were used, one for each section.



BOTH RECTANGULAR COLUMN LEGS of upper tier were poured simultaneously. In about 90% of the pier elevation, alignment is within 1/16″.



TEXAS HIGHWAY DEPARTMENT sketch of 1,310′ long bridge on Highway 90, near Langtry, Texas. The 3-span continuous deck truss cantilever structure runs from rim to rim across top of the canyon —272′ above the traditionally treacherous Pecos River.

You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

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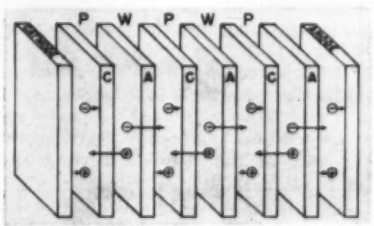
Fresh From Salt at $.42 per 1,000 Gallons

In a recent talk before The Engineers Society of Western Pennsylvania, William E. Katz of Ionics, Inc., Cambridge, Mass., revealed significant field test cost data on the electric membrane method of demineralizing saline waters and showed how a 2-mgd plant could produce at 42 cents per thousand gallons, under certain conditions.

The accompanying charts indicate initial construction costs and initial maintenance and operating costs for the electric membrane process, compared to recent distillation plants (ENR, Sept. 6, p. 72 and Sept. 20, p. 12, 1956) and several of the more costly normal municipal fresh water supplies. The membrane process figures must be qualified, in that they hold only for brackish waters (not sea water) containing from 1,000 to 5,000 ppm of dissolved solids. However, brackish water in this range is fairly common.

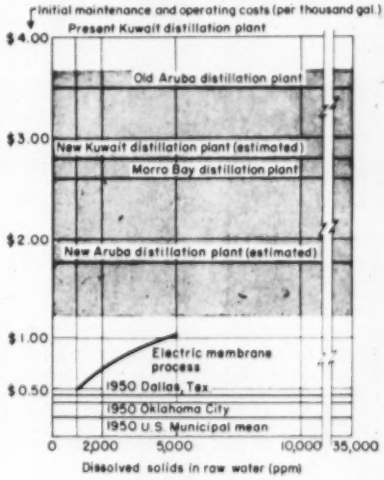
Costs for the membrane process were obtained from 40,000 hours of operating time on 12 units, varying in size from 360 to 40,000 gpd. The process removes ionized salt and mineral particles from natural waters by a dc electrical field that transfer the particles through thin plastic membranes. Water flows in a film 1 mm thick between two membranes. Depending on the charge of the membrane, it passes either negative or positive ions, but not both.

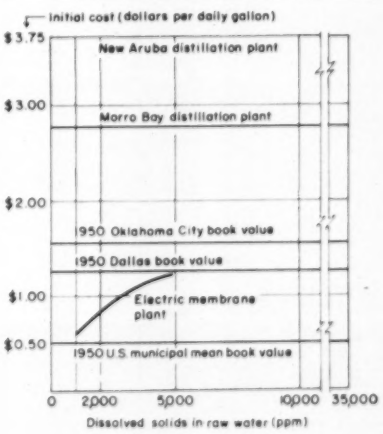


A IS ANION membrane, C is cation membrane, P is product stream, W is waste stream.

The standard Ionics apparatus is a stack of 300 membranes, each 18 x 20 in., rated at 20 gpm with a demineralization of 40 to 50% of the entering salts. Larger plants simply incorporate more of these stacks. Thus, according to Katz, it is possible to scale up data for a 2-mgd plant.

Based on a flow rate of 1,400 gpm and a dissolved solids reduction from 1,600 to 500 ppm (requiring two stages of demineralization or 140 stacks), a 2-mgd treatment plant can be built for $1.4 million and operated at 42 cents per thousand gallons. The largest operating costs are said to be membrane replacement and capitalization.





The biggest electric membrane plant yet installed—an 86,400-gpd unit—is soon to be in operation on Bahrain Island in the Persian Gulf for Bahrain Petroleum Co., Ltd. Other plants less than 20,000 gpd are in operation in Montana, Texas, New Mexico and on the "Texas Towers" off the northeast coast of the U. S.

Foaming Sewage?

Study finds detergents not necessarily to blame

Excessive frothing in sewage plants ". . . appears to be influenced to a large extent by operating conditions and practices and not due necessarily to detergents." This claim was made at the recent annual convention of the Association of American Soap & Glycerin Producers, Inc. It was also stated that detergents, in concentrations normally found in domestic sewage, are not toxic to activated sludge bacteria.

The progress report of the organization's study of the synthetic detergent question (ENR June 7, 1956, p. 100)—presented by Henry V. Moss of Monsanto Chemical Co.—further dealt with the effects of phosphates, one of the components in detergents, on water treatment. The report found that phosphates in their offending form (polyphosphates) do not find their way in sufficient concentrations into raw waters to pose a real problem in water treatment operations.

On the issue of frothing (or foaming), a field survey of several activated sludge plants could supply no definite tie-in between detergents and foaming, according to the report. One instance was cited where, in two parallel aeration tanks receiving the same sewage, frothing at times occurred in one but not the other.

ABS (alkyl benzene sulfonate), the predominant organic active constituent of synthetic detergents, was found to be partially eliminated by conventional sewage treatment. Search for specialized strains of bacteria capable of completely destroying ABS will continue.

The research committee has requested an additional grant from AASGP for further work, primarily seeking of remedial measures. One of the new projects proposed is to find practical means of removing small traces of ABS occasionally found in water supplies.

Models of St. Lawrence Areas Put in Operation

Scale models of the Lachine Rapids and Montreal Harbor area were placed in operation at the St. Lawrence Seaway Authority's third hydraulic laboratory last month at Ville LaSalle, a Montreal suburb.

Scale of the models is 1 to 250 vertical and 1 to 200 horizontal. They are fixed bed type with surfaces molded in concrete. All topographic features and navigation facilities are fully represented.

The models will help determine through series of experiments whether the proposed navigation development is best suited for its purpose and what changes might be necessary to improve it.

The larger model, Lachine Rapids Reach, reproduces the section of the

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. . . Research

St. Lawrence River between Dorval Island (in Lake St. Louis) and a point 3,000 ft below Heron Island (in Laprairie Basin), a distance of nine miles. This covers the area where the authority is constructing the Cote Ste. Catherine Lock and a canal extending upstream to Caughnawaga. The model will be used to study integration of the Seaway and planned power developments in the Lachine section, in addition to study of water levels and current velocities.

The Montreal Harbor model will show navigation conditions at the lower entrance to St. Lambert Lock and the way in which vessels are to pass from the harbor to the Seaway. Velocities of currents near Victoria Bridge will also be studied in relation to proposed modification of the St. Lambert end of the bridge.

The new models follow two others already at work in Ottawa. One represents a portion of the International Rapids section. The other permits study of the action of a ship in a Seaway lock.

The Ottawa models were constructed by the National Research Council. Those at LaSalle were created by Neyrpic Canada Ltd., whose parent company is headquartered at Grenoble, France.

Water Can Be Stored In City's Well Field

More than 10,000 acre-ft of water can be stored in the Ogallala formation under Amarillo's (Texas) 1-sq-mi well field, according to a U. S. Geological Survey report.

Artificial-recharge tests have shown that wells in the field may be recharged at a rate of more than 1,000 gpm for a year without appreciably lowering water level in the reservoir beyond the limits of the field.

The tests were sponsored by the City of Amarillo, the Texas Board of Water Engineers and USGS.

One-Year Air Pollution Study Launched for Gary, Indiana

A year-long study to determine some of the sources of air pollution and possible methods of control has been launched in Gary, Ind.

Gary's city council has authorized Armour Research Foundation of the Illinois Institute of Technology to make the study and recommend abatement measures. It is hoped that possible legislative action stemming from the study will result in an effective and practical air pollution ordinance for the city.

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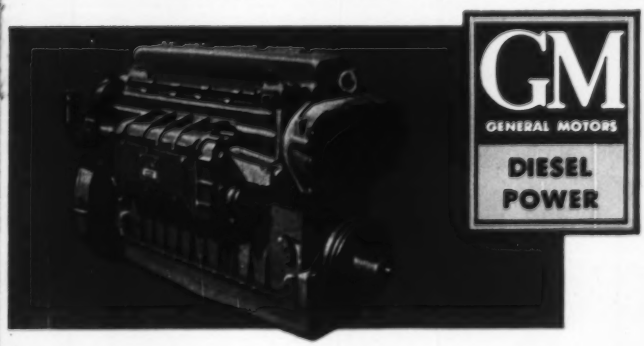

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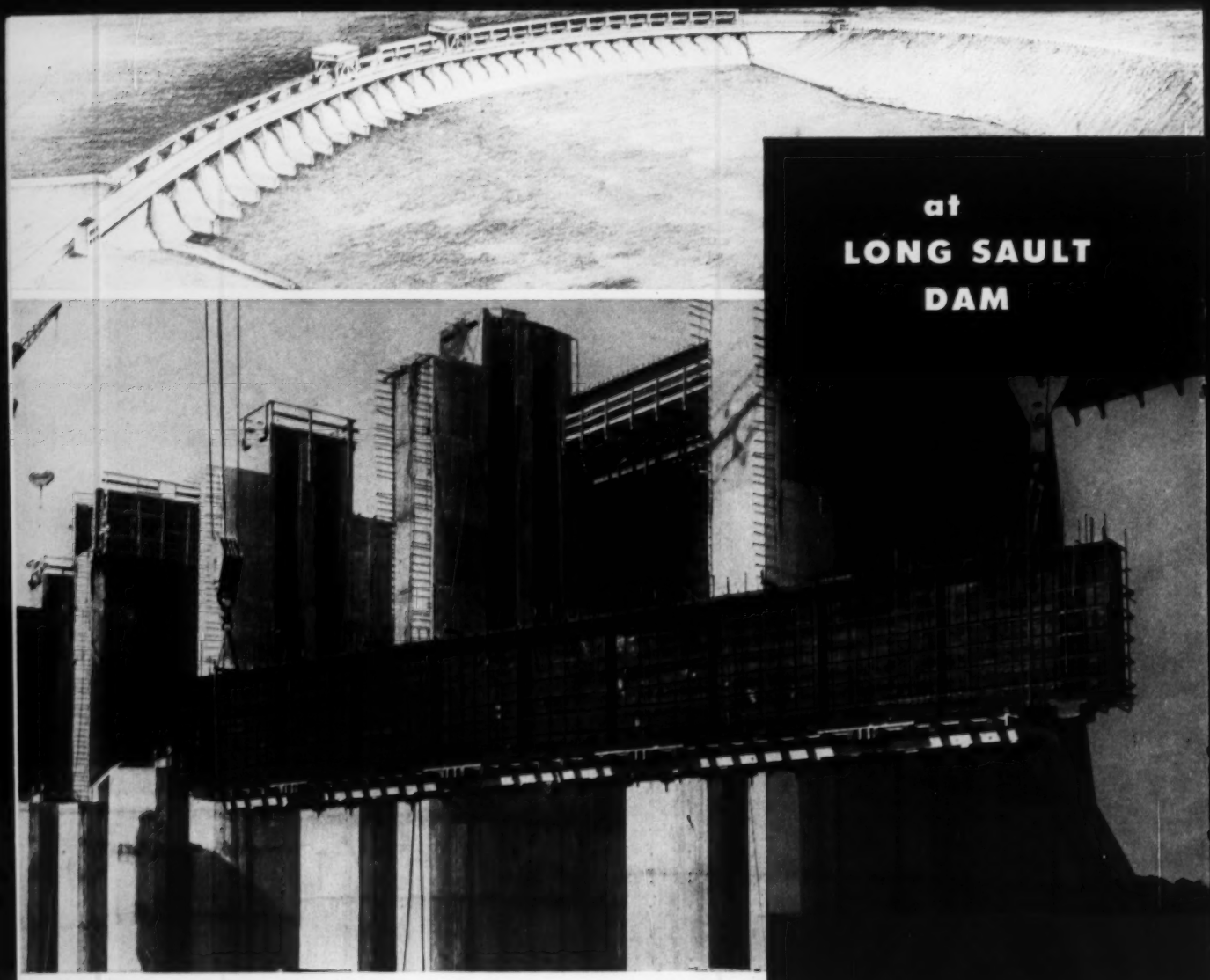

at LONG SAULT DAM

Structural Steel by FORT PITT BRIDGE

At this spectacular project of the Power Authority of the State of New York, as at many other major bridge, power plant and industrial building jobs, structural steel fabricated by FORT PITT BRIDGE plays an important part. Long Sault Dam is a component in the St. Lawrence River Project, the $660 million power development at International Rapids. 3,000 tons of steel by FORT PITT BRIDGE are being used for the Spillway Bridge and crane girders crossing the dam.

Contractors: Walsh, Perini, Morrison, Kiewit, Utah Companies (A Joint Venture)

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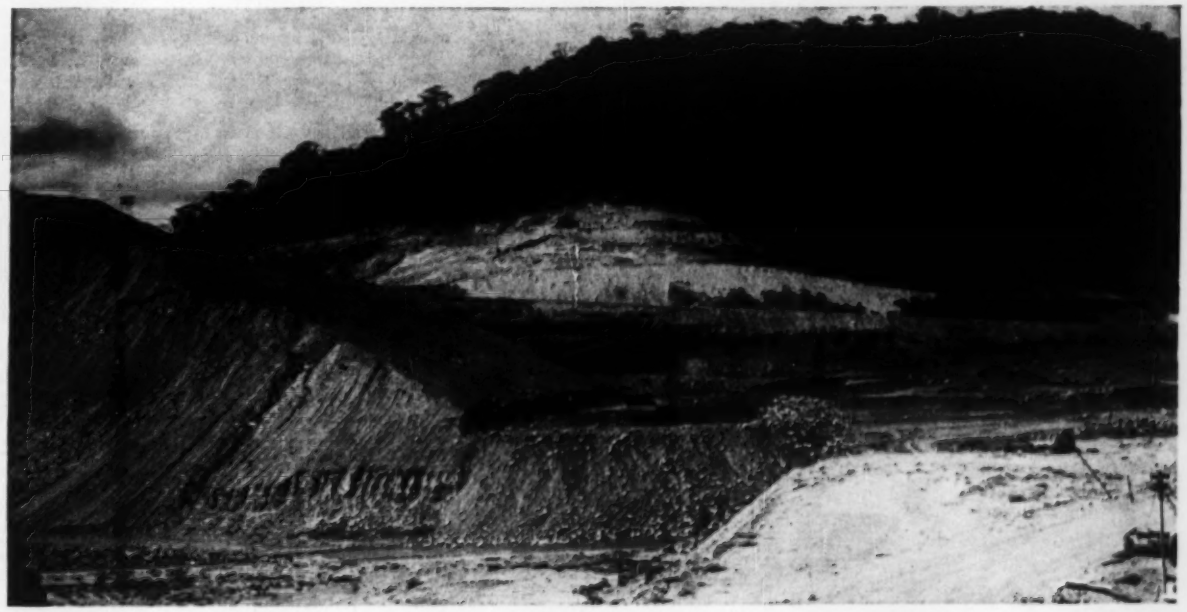

Earth-and rock-fill dam plugs mountain pass in second stage of . . .

Peru's Quiroz Irrigation Project

A 5.3-million-cu-yd earth- and rock-fill dam and 225 miles of main and lateral canals comprise the $28.5-million second phase of Peru's Quiroz Irrigation Project. When completed this June, the much-needed project will free 125,000 acres of land in northern Peru from danger of drought.

First phase of the project, completed in December, 1953, set up canals and tunnels to divert water from the Quiroz River to bring dependable irrigation to the lower and middle areas of the Piura Valley.

The 2,624-ft-long, 164-ft-high dam of the second stage will plug the pass between two mountains—Cerro San Lorenzo and Cerro Beltran—and block the Chipillico River. The reservoir formed will cover 95 sq mi, store 164,000 acre-ft of water and be supplied by water diverted from the Quiroz River through the canals and tunnels built in the first stage.

Builders of both the first and second stages, Compania Morrison-Knudsen del Peru, a subsidiary of Morrison-Knudsen Co., Inc., Boise, started on the second stage in October, 1955.

The dam the company is putting up with its big earthmoving equipment will have a 2½ to 1 slope, be 692 ft wide at the base and 26 ft wide at the crest. A 10- to 15-ft-deep core trench to bedrock was cut out with shovels, and wagon drills put in a pattern of holes up to 50 ft deep into the rock. A grout curtain of 1 part cement to 2 parts water was pumped into the holes at 100 psi to further seal the dam's foundation.

Clay brought from upstream was spread in 6-in. lifts by tractors and compacted to 95% Proctor by sheepsfoot roller—to build up the impervious central zone of the dam. Over a sand and rock zone for the transition between impervious and pervious layers, riprap is laid.

The embankment was not built up all across the length of the dam. This allowed the river to follow its natural course until a diversion tunnel under the toe of Cerro San Lorenzo was completed. A 1,000-ft-long tunnel lined to 15-ft-dia with concrete enlarges to 35 ft high under the axis of the dam to accommodate the control structure. The lower end of the tunnel increases to 28x18 ft to take a steel penstock for future adaption for power.

The main canal, started along with the dam, will be lined with concrete. It is to be 13 ft wide at the bottom, 26 ft at the top, and 13 ft deep. Concrete lining of the main canals will be done mechanically except for 9.5 miles of the Yuscay canal. For this stretch, 400 workers are lining the canal with masonry at least 1 ft thick—by hand. Concrete is fed by mixers and rock by human conveyors. The men work from 2x4 templates set at narrow intervals along the canal. Feeder canals are to remain unlined.

The main Yuscay canal, leading from the base of the dam to the land to be reclaimed, will have a starting capacity of 1,059 cfs. It is to have a 0.00122 grade and a current velocity of 9 fps.

First phase of the Quiroz project was financed completely by Peru. Second

HAND-PLACED MASONRY lines 9.5 miles of one of the project's main canals.

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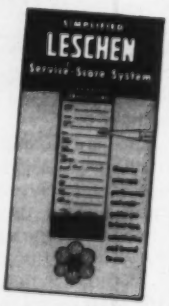
Keep the score—see the results—and you'll use more Red-Strand Wire Rope. See your Leschen man or write Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Missouri.



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HKP LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.

phase financing is being helped by a World Bank 25-year, $18-million loan to cover cost of imported services, material and equipment.

Project manager for M-K is Harold L. Gourlie; project engineer is John W. Taylor.

U. S. Experts Approve The Kosi River Project

Four U. S. hydraulic experts have approved the $94-million Indo-Nepalese Kosi River multipurpose project.

Their advice had been sought by the Nepalese, who doubted that the project would benefit them all.

Plans have been drawn up by Indian engineers and work has started on the taming of the Kosi, which, rising in Tibet, flows through Nepal and Bihar (East India) and annually floods the North Bihar plains.

The Kosi project includes a dam at Hanumannagr, near the Nepal border and 30 miles below Chatra Gorge. The dam is to be 1 mi long, 50 ft high and will have two spillways, of which the main one will be 3,190 ft long. Utilizing a head of 21 ft, a powerhouse is to be built with an initial capacity of 13,200 kw; ultimate, 21,000 kw. Regulating sluices are to be provided for irrigation.

A total of 50 miles of earth embankments already has been completed by unskilled labor supplied by the surrounding villages.

Main construction difficulties involved are that the project falls in a highly seismic zone and that the river is unpredictable, often forming new channels after a flood.

The U. S. experts are B. E. Torpen of the Corps of Engineers, Clarence Rawhouse and Thomas Maddock of the Bureau of Reclamation, and T. B. Leopold of the Geological Survey.

Kafue River Power Scheme Shelved for the Present

The Government Power Board, builders of Northern Rhodesia's Kariba hydroelectric scheme on the Zambesi River (ENR Sept. 6, 1956, p. 71), has shelved plans for another large project on the Kafue River, the country's main river.

The project would have been built near the confluence of the Zambesi and Kafue, about 60 miles downstream from Kariba Gorge.

Comprehensive surveys already have been conducted at Kafue and any scheme eventually built there would be on a smaller scale than the $316-million Kariba job.

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Men and Jobs

C. D. Haxby Elected President Of National Constructors

C. D. Haxby, vice president, Rust Engineering Co., of Pittsburgh, has been elected president of the National Constructors Association.

NCA is composed of leading engineering and building firms engaged in design and construction of chemical plants, petroleum refineries, steel mills and power plants.

Carl B. Whyte, president, Procon Inc., Des Plaines, Ill., was elected vice president.

New members of the executive committee, in addition to the officers, are: Paul L. Wetcher, manager, labor relations, C. F. Braun & Co.; W. B. Poor, vice president, Ford Bacon & Davis Construction Corp.; Paul S. Klick, Jr., personnel director, Foster Wheeler Corp.; H. A. Denny, vice president, Koppers Co., Inc., and D. S. Pelletier, partner, Sanderson & Porter.

AWWA Names Merryfield For Its Next President

Fred Merryfield, professor of sanitary engineering at Oregon State College in Corvallis, Ore., is the official nominee of the American Water Works Association for its presidency. As the choice of the Board of Directors' nominating committee, he will become president of AWWA officially on Mar. 1 and be installed to succeed Paul Weir, manager of the Atlanta water department.

(*Men & Jobs cont. on p. 70*)

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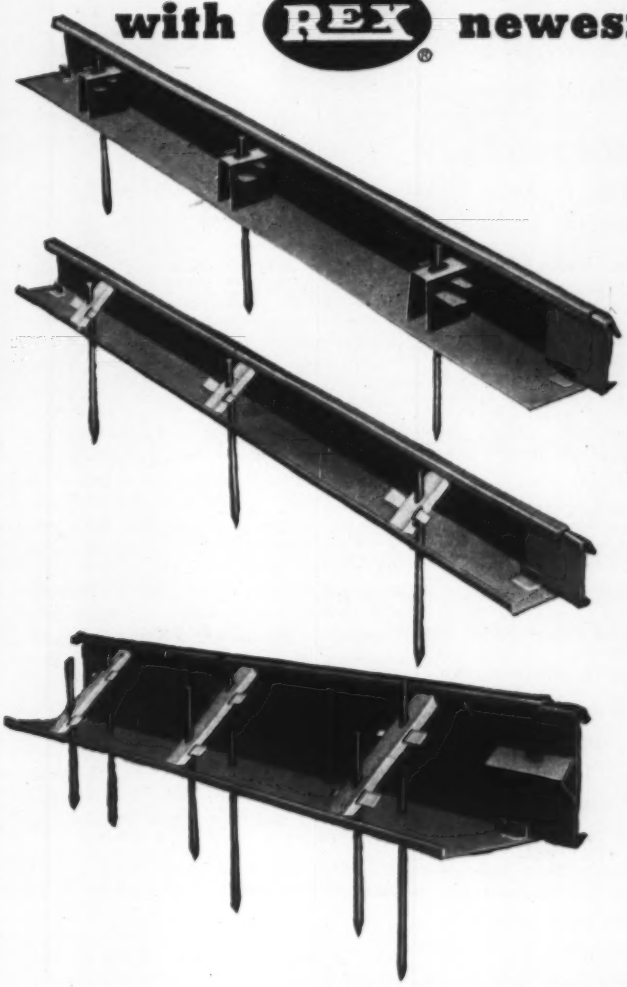

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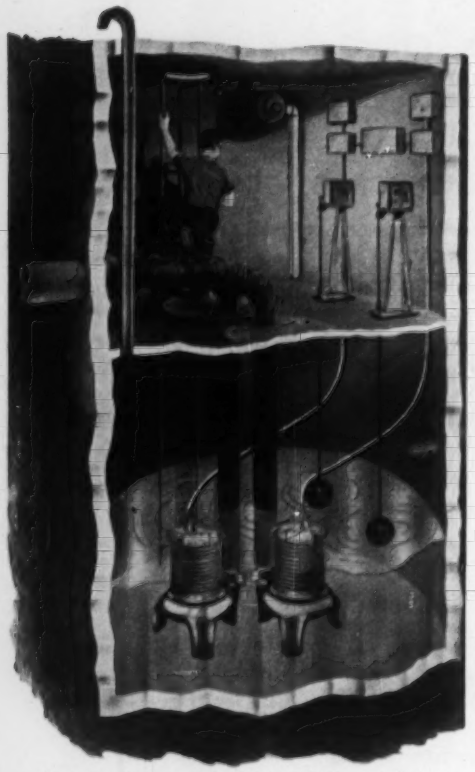

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. . . Men and Jobs

Nominated to serve as vice president of the association is Lewis S. Finch, vice president and chief engineer of the Indianapolis Water Co. William J. Orchard, a director of Wallace & Tiernan Inc., is to serve as treasurer of AWWA as the successor to William W. Brush. Brush ended a 35-year stint as treasurer of the association and has also recently retired after 62 years in waterworks (ENR Jan. 31, p. 58). Orchard has been a mainstay of the organization for years and is the retired general manager of the firm he now serves as a director.

Men and Jobs Briefs . . .

Business—**W. J. Burmeister** of Waukesha, Wis., named state highway maintenance engineer. . . . **Claude F. Skidmore** has been selected as district engineer for Michigan and northern Indiana for the Asphalt Institute with offices in Lansing, Mich. . . . **Durando Miller** is the new technical manager for the Permutit Co., New York. . . . **Harley C. Boeke** is the new superintendent of utilities for the city of Rock Island, Ill. . . . **Kenneth S. Brundige** of Plainfield, N. J., has been appointed manager of the condenser department of Foster Wheeler manufacturing company. . . . **Jack Y. Kubota** is the first city engineer for Carlsbad, Calif. . . . **Howard E. Raymond,** city engineer of Concord, N. H., for the past 18 months, has been appointed superintendent of public works. . . . **W. J. Fulton** has been appointed deputy minister of the Ontario, Canada, Department of Highways. . . . **William R. Mason** has been promoted to the position of chief engineer for Arcadia Metal Products, Fullerton, Calif.

Associations—**Ralph M. Westcott,** Los Angeles mechanical engineer, was reelected president of the Consulting Engineers Association of California at the fourth annual meeting of the group held at Carmel, Calif., Jan. 28. Other new officers are vicepresident—**Mark Falk,** San Francisco structural engineer, and secretary-treasurer—**Edward Lowe,** Fresno electrical engineer . . . **George H. Atkinson,** president of Guy F. Atkinson Co., South San Francisco, Calif., was elected president of the Beavers, western heavy construction association. Vicepresidents are **John A. Kier** of W. E. Kier Construction Co., El Segundo, Calif., and **John M. Sawyer** of Macco Corp., Paramount, Calif. Secretary-treasurer is **J. P. Shirley, Jr.,** of Gunther & Shirley Co., Sherman Oaks, Calif. **Rehman Scholz** is the new president of the Toledo, Ohio, chapter of the ASCE.

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300	8,800 lbs.	—	204
400	15,000 lbs.	26,000 lbs.	197
500	18,000 lbs.	32,000 lbs.	197
600	21,000 lbs.	35,000 lbs.	197
700	23,000 lbs.	45,000 lbs.	216
800	25,000 lbs.	55,000 lbs.	222
900	30,000 lbs.	65,000 lbs.	232
Forward-Control Models			
P300	9,000 lbs.	—	204
P500	15,000 lbs.	—	204
C.O.E. Models			
C500	18,000 lbs.	32,000 lbs.	197
C600	21,000 lbs.	35,000 lbs.	197
C700	22,500 lbs.	45,000 lbs.	216
Tandem Models			
T700	32,000 lbs.	45,000 lbs.	216
T800	36,000 lbs.	55,000 lbs.	222
T900	46,000 lbs.	65,000 lbs.	232

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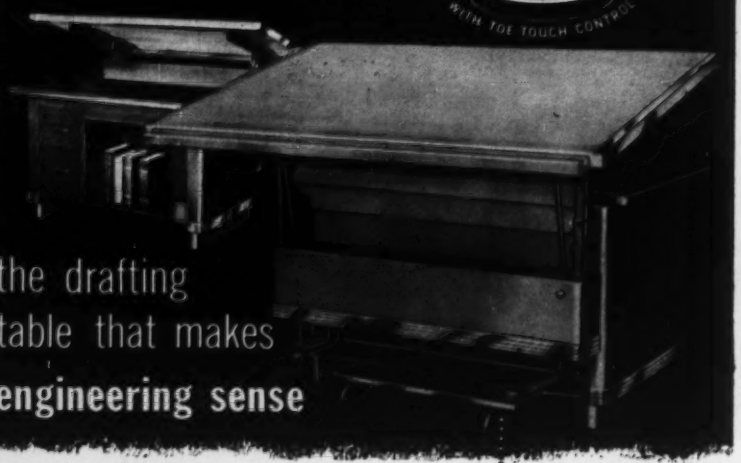

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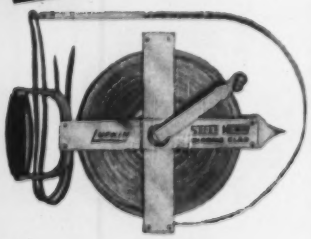

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Books

Failures

ENGINEERING STRUCTURAL FAILURES—By Rolt Hammond. 224 pp. Philosophical Library, New York $12.00

The author provides a useful survey of both the causes and results of failures in a variety of examples over a century of engineering, including dams, harbor works, buildings, bridges and tunnels.

Hammond reviews modern methods of testing materials and the advances in non-destructive testing. His chapter on testing ranges from x-ray and electronic developments to the recently completed de Havilland aircraft pressure-test tank.

The importance of scale model and full scale research on structural problems is emphasized.

Some of the outstanding cases of failure reviewed are: the Folkestone Warren landslip; the Bouzey, Marshall Creek and Dolgarrog dams; breakwater failures in Catania, Genoa and Algiers; the Knickerbocker Theater in Washington; the Tay, Quebec and Tacoma Narrows bridges; the Sydney water pressure tunnels, and a number of welded ships.

The author has included many useful references after each chapter. This book can be recommended as an excellent addition to the civil engineer's library. Hammond is the author of "Foundation Engineering" and other well-known books on civil engineering.

Conference Proceedings

BIOLOGICAL TREATMENT OF SEWAGE AND INDUSTRIAL WASTES—Edited by Brother Joseph McCabe, F.C.S., and W. W. Eckenfelder, Jr.—393 pp. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. $10.00.

The proceedings of a conference at which aerobic processes of wastewater treatment were analyzed by experts—from basic theory to practical applications—are presented in this volume edited by two who programmed the meetings.

Presented as Volume I, this up-to-date text on aerobic oxidation is intended to have as a companion piece the proceedings of a second conference, on the anaerobic decomposition processes of biological waste treatment. (This conference is scheduled for Apr. 24-26; it, too, is to be sponsored by and held at Manhattan College in New York City.)

The text of this volume is organized, as was the conference, in four parts: Theory and mechanism of biological waste treatment; aeration—theory and design; sewage treatment; and industrial waste treatment.

The 33 papers grouped into these four parts have at least that many prominent authors. Such names as Sawyer, McKinney, Renn, Orford, Okun, Kalinske, Torpey, Rankin and Gehm are indication of the authors who contributed to the conference (ENR April 21, 1955, p. 23) and to this text.

Miscellaneous Notes

Hotel fires are analyzed by the National Fire Protection Association in a 24-page bulletin (No. 56-6, 50¢). Major causes of fatal fires—origins and contributing factors—are pinpointed. Pertinent references to NFPA fire-safety standards are made throughout the bulletin. Included also are summaries of fatal fires since 1858 in which 10 or more people died. National Fire Protection Association, 60 Batterymarch St., Boston 1, Mass.

Dams in Italy—A 28-page pamphlet, well-illustrated, gives a brief description of each of the seven volumes making up the publication "Dams for Hydroelectric Power in Italy." The volumes are published in Italian, French and English editions by Anidel, Milan, Italy, and are illustrated with photographs and plans of each dam. The pamphlet is available from Anidel.

Building code standards published last year by the American Society for Testing Materials are brought up to date in the 1956 supplement, just published. Included are 7 new specifications, 2 new methods of testing, 21 major revisions and 63 minor revisions. The original and supplement together cover a broad range of construction materials, including structural and reinforcing steel; cast-iron, steel and copper pipe; bituminous roofing; cement; gypsum; ready-mixed concrete, and many others. 224 pages, 6x9 in., paper bound, $2.75. ASTM Headquarters, 1916 Race St., Philadelphia 3, Pa.

Proceedings of the Sixth Hydraulic Conference—Bulletin 36. 276 pp. Department of Publications, State University of Iowa, Iowa City, Iowa. $3.50.

Supplement to 1955 Edition of ASTM Standards in Building Codes—224 pp. American Society for Testing Materials, 1916 Race St., Phila. 3, Pa.

Planning Facilities for Health, Physical Education, and Recreation by Participants in National Facilities Conference—Revised Edition. 154 pp. The Athletic Institute, Inc., 209 S. State St., Chicago 4, Ill. $2.50.

Air Conditioning—Refrigerating Data Book, Applications Volume—1,100 pp.

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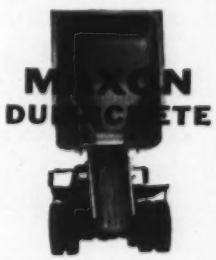

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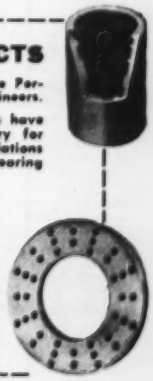

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BIBLIOGRAPHY OF THE MATERIAL DAMPING FIELD—by L. J. Demer. PB 121437. 105 pp. Office of Technical Services, U. S. Dept. of Commerce, Washington 25, $2.75.

THE FUTURE OF ARID LANDS—464 pp. American Association for the Advancement of Science, 1515 Massachusetts Ave., N.W., Washington 5, D. C. Price to members $5.75; non-members $6.75.

AMERICAN CIVIL ENGINEERING PRACTICE—Volumes I and II—John Wiley & Sons Inc., 440 Fourth Ave., New York 16. $15.00 each.

RAYLEIGH'S PRINCIPLE—And Its Applications to Engineering—by G. Temple and W. G. Bickley. 152 pp. Dover Publications, Inc., 920 Broadway, New York 10. $1.50.

TIMBER DESIGN AND CONSTRUCTION HANDBOOK—622 pp. Dodge Books, 119 W. 40th St., New York 18. $12.75.

AIR CONDITIONING—REFRIGERATING DATA BOOK, Applications Volume—1,100 pp. American Society of Refrigerating Engineers, 234 Fifth Ave., New York 1. $10.00.

PERSPECTIVE—A New System for Designers—by Jay Doblin. 67 pp. Whitney Publications Inc., 18 E. 50th St., New York 22. $5.00.

1956 SUPPLEMENTS TO BOOKS OF ASTM STANDARDS—7 parts. American Society for Testing Materials, 1916 Race St., Phila. 3, Pa. $4.00 per part; $28.00 per set.

RELAXATION PROPERTIES OF STEELS AND SUPER-STRENGTH ALLOYS AT ELEVATED TEMPERATURES—Special Technical Publication No. 187. 104 pp. American Society for Testing Materials, 1916 Race St., Phila. 3, Pa. $4.00.

ASTM STANDARDS ON ZINC-COATED IRON AND STEEL PRODUCTS—143 pp. American Society for Testing Materials, 1916 Race St., Phila. 3, Pa. $2.25.

SEWAGE TREATMENT—by Karl Imhoff and Gordon M. Fair. Second Edition. 338 pp. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16. $7.50.

STRUCTURES—by Pier Luigi Nervi. 136 pp. Dodge Books, 119 W. 40th St., New York 18, N. Y. $6,95.

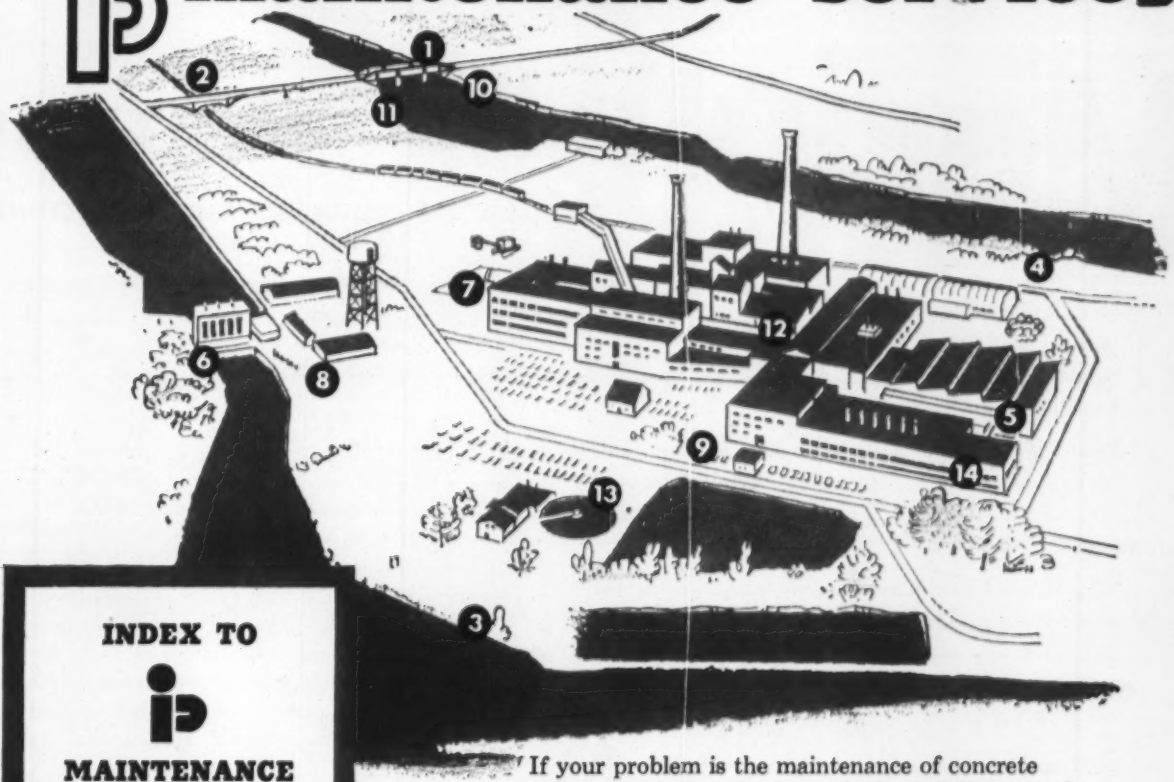
SECTIONAL PROPERTIES OF THE CIRCULAR FRACTIONS—By Monroe Ames, 27 pp. Exposition Press, Inc., 386 Fourth Ave., New York 16. $5.00.

ENGINEERING STRUCTURAL FAILURES—by Rolt Hammond. 224 pp. Philosophical Library, Inc., 15 E. 40th St., New York 16. $12.00.

APPLIED STRENGTH OF MATERIALS—by Alfred Jensen. 343 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36. $5.75.

what you should know about

maintenance services



INDEX TO

MAINTENANCE SERVICES

1. rehabilitating bridges
2. repairing lined and unlined tunnels
3. repairing seawalls, retaining walls, abutments
4. encasing deteriorated piles
5. stabilizing plant or machinery foundations
6. controlling leakage in dams and other hydraulic structures
7. placing bearing or cut-off piles **without vibration**
8. stabilizing poor bearing soils
9. sealing porous foundation material
10. grouting voids under piers, foundations, footings
11. correcting scour damage
12. reducing settlement of bases or foundations
13. repairing deteriorated concrete or masonry structures
14. repairing or releveling floor slabs

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Why MARIONAIR Control—Only Marion went all the way with air control as early as 1940; only Marion has devoted 16 years to its refinement and perfection. Marion has the world's broadest line of air controlled excavators and cranes. Marion makes air do more.

Easy Does It —Marionair Control gradually and smoothly exerts from 0 to 90 or more pounds of pressure on the clutches, in direct proportion to hand pressures on the controls. It is easy to use, easy to service.

Efficiency Goes Up —Operators remain fresh and alert all shift long because Marionair Control virtually eliminates operator fatigue. "Feel of the load" is retained, helping the operator to work confidently and efficiently.

Easier Maintenance—Its simplicity means fewer maintenance problems. No rods, levers and pin connections to become loose with wear.

Smooth Performance—A smooth, positive flow of power to the clutches, without jerkiness or delay. No need for a fine sense of timing to put the dipper, bucket or crane load where you want it.

FIELD PROVED FOR 16 YEARS

Marionair Controls have been proved by 16 years on-the-job . . . by all types of service and working conditions. Marionair Control has been integrated into the basic design of machines. Marion has made fullest possible use of compensating valves for gradual, smooth engagement of friction clutches . . . quick-release valves for jaw clutches and other "on or off" controls. Marionair Control puts full power at the operator's finger tips . . . gives him instant, accurate control of the load. Put Marionair Control's "muscles of air" to work on your jobs. Let a compressor—not your operator—do the huffing and puffing.

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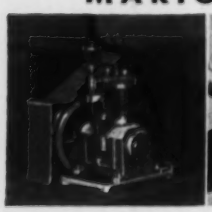
When Marionair Control is teamed with big, smooth Marion clutches, a torque converter and a foot accelerator, you are ready for the most ticklish precision crane jobs involving the lightest or heaviest loads. One foot on the accelerator can lift the load, lower it, inch it into position or hold it indefinitely in one position.

MARIONAIR CONTROL STEP-BY-STEP



Dependable, kingsize compressor, operated by power unit through V-belt drive, has capacity to maintain full pressure in extremely fast cycles; its operation is automatically controlled.

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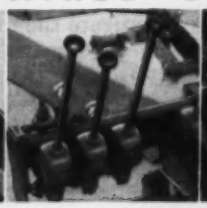
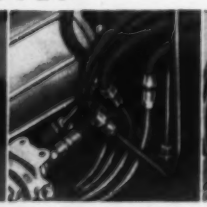
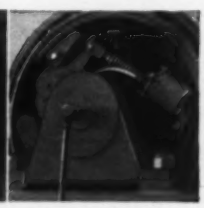


Compensating valves "meter" air to cylinders or expanding tubes controlling friction clutches. Operator retains feel of the load, gets smooth, gradual engagement or fast, crisp cycle time.

Quick-release valves govern operation of jaw clutches and other "on-or-off" controls. Operator's wrist movement produces instant, positive action. Controls conveniently grouped on panel in cab.



Strong copper tubing and heavy-duty flexible hose carry air pressure to all parts of machine; replace conventional levers, rods and pins. Operators like simplicity and reliability of air.



Marionair Control engages this clutch in direct proportion to the speed and firmness of the operator's hand pressure on control lever. The response is uniform, consistent and dependable every time.

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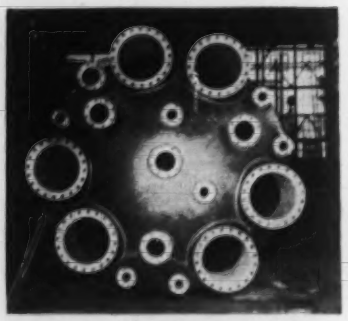

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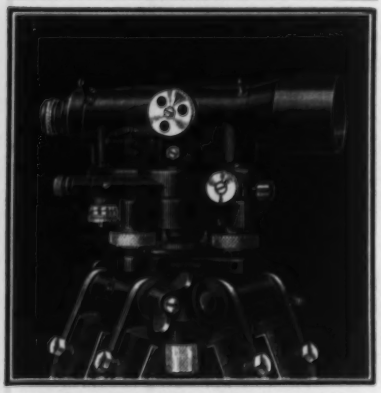

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Steel-Girder Bridge Cost Exceeds Estimate by 44%

Backlog in structural steel deliveries may have affected bidding on this $2,521,043 bridge superstructure in Pawtucket, R. I. The bridge will cross Seekonk River with five steel deck girder spans having an overall length of 700 ft and a width of 109 ft.

D. O. Cargill is bridge engineer for the State of Rhode Island and Providence Plantations, Division of Roads and Bridges. Charles A. Maguire & Associates of Boston, Mass., are consultants.

The successful bid from Harris Structural Steel Co., Inc., New York City, is 44% above the engineer's estimate and 3.6% below the nearest competitor. But to make the two low bids comparable, the $252,700 total for construction maintenance gear is added to the contract price. These items were deleted to be furnished under a separate contract.

The spans are 85-150-225-150-84.5 ft. The 150-ft spans on each side of the center span are both continuous over two piers and have cantilever extensions into adjoining spans. Hung-span construction is used in the center and end spans.

Work includes concrete deck slabs with hot-mix asphalt concrete pavement, a structural railing and deck lighting features.

The three bidders on this Federal Aid Project are:

1C	Harris Structural Steel Co., Inc., New York	$2,521,043
2	Bethlehem Steel Co., Bethlehem, Pa	2,677,754
3	Phoenix Bridge Co., Phoenixville, Pa	2,949,340
EE	R. I. Department of Public Works	1,751,490

Bids: 12-5-56 Items	Unit	Quantity	Unit Prices 1C	2
Pvmt, asph conc, hot mix, cl I, type I-1	sy	7,973	$1.40	$1.80
Scuppers, piping, fittings with all acces compl	ls	job	28,000	93,875
Conc mary, cl AA, brl deck & related work	cy	2,388	69.00	110.00
Curb, gran, quarry split, 8x12" straight	lf	2,792	5.10	6.20
Joint filler, preform, non-extrudg, cork 1", f&p	sf	48	1.85	1.60
1 1/2",f&p	sf	29	2.35	2.50
Joint seal stop, convex stainl stl or alum, 3x1/8"	lf	700	1.55	0.69
water seal 1x3, compl ip	lf	700	2.70	2.00
1 1/2x1", compl ip	lf	114	1.70	1.30
Reinf bars, intermediate gr	lb	484,265	0.14	0.117
Hand rail, met, ip	lf	1,621	37.00	36.00
Traffic plates at exp jts, ip	ls	job	37,100	34,660
Str stl, f, fabr & erect	ls	job	1,881,365	1,854,100
Stl, castgs, fixed & exp shoes, ip	ls	job	107,560	101,070
Forgings, pins, ip	ls	job	65,000	43,170
Maintenance travrs & carrgs w driv mechsm, stl, compl	ls	job	92,000*	88,800
cars, cages & platforms, alum alloy, compl	ls	job	160,750*	163,050
Paint, 1 field coat, compl	ls	job	31,050	28,720
1 final color coat	ls	job	22,600	25,110
Elec light standards, ip	ea	14	420.00	504.00
Pipe cond, std elec, rigid stl, galv w ex fings, 2"	lf	1,370	2.20	2.70
1 1/4"	lf	160	1.35	1.65
Elec pull boxes, galv, 24x18x12"	ea	4	155.00	188.00
18x12x12"	ea	10	107.00	137.00
Drains & cov, sub-pvmt, wi	ea	20	8.00	6.20
Membrane, waterproofing, incl prime coat, compl	sy	7,973	2.05	2.60

To be completed: 9-1-58
Liquidated damages: $150 per day

*Not included in contract as signed

Metal Roof Lining for Calif. Highway Tunnels

Galvanized corrugated metal plates are assembled to form a partly circular roof to deflect water in three highway tunnels. These tunnels, Arch Rock, Grizzly Dome and Elephant Butte are near the Butte Plumas County Line, about 35 miles north of Oroville, Calif.

The California Division of Highways, G. T. McCoy, state highway engineer, awarded the $55,404 contract to R. E. Hertel, Sacramento, Calif. This price is 26.5% below the second low bid.

Work includes anchors, gutters and downdrains and the maintenance of traffic through the site. The removal of rock or masonry to provide clearance for metal plate roof and gutters is paid for separately.

Prevailing wage rates range from $2.325 to $3.40.

1C	R. E. Hertel, Sacramento, Calif	$55,404
2	Bos Construction Co., Berkeley, Calif	75,330
3	Jon C. Gist, Sacramento, Calif	78,302

Bids: 11-28-56 Items	Unit	Quantity	Unit Prices 1C	2	3
Metal tunnel lining	lf	486	$114.00	$155.00	$157.00

Steel for Air Force Academy in Colorado

Unit price bids reported here cover structural steel and sleeve and anchor bolts for the physical education building and superintendent and staff building at the Air Force Academy north of Colorado Springs, Colo. Work is for the U. S. Air Force Academy construction Agency, Colorado Springs.

Kansas City Structural Steel Co. took the $687,645 contract.

1C	Kansas City Structural Steel Co., Kansas City, Kan	$687,645
2	Midwest Steel and Iron Works, Co., Denver, Colorado	695,550

Bids: 10-23-56 Items	Unit	Quantity	Unit Prices 1C	2
Cadet Physical Education Complex				
Struct steel,furn, fabr, deliv & erectfor columns, beams girders, trusses, base plates,	t	1,538	$303.85	$310.00
Sleeves & anchor bolts, furn, fabr & deliver to bldg contractors	t	4	600.00	500.00
Academy Administration Superintendent and Staff Bldg				
Struct steel, furn, fabr, deliv & erect for columns, girders, base plates, etc	t	724	$301.00	$300.00
Sleeves & anchor bolts, furn, fabr & deliver to contr	t	1	600.00	500.00

Time to complete: 650 calendar days
No liquidated damages

Materials and Labor Prices — Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Jan 24; Next, Feb 21
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Jan 31; Next, Feb 28
- Wage Rates, Building Board, Lath, Insulation: Last, Jan 31; Next, Feb 28
- Cement, Aggregate, Ready-Mixed Concrete, Asphalt: Last, Feb 7; Next, Mar 7

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.00	$4.85	$5.075	$10.85	.....	$101.50	$120.00	$6.35	$8.775	$6.035	.....
Chicago Area	5.00	4.85	5.075	10.85	$5.90	101.50	120.00	6.35	8.775	6.035	.....
Pittsburgh Area	5.00	4.85	5.075	10.85	5.90	101.50	120.00	6.35	8.775	6.035	$13.10
Buffalo Area	5.00	4.85	5.075	10.85	5.90	101.50	120.00	6.35	8.775	6.035	13.10
Cleveland	.....	.....	5.075	10.85	5.90	.....	.....	.....	.....	.....	13.10
Youngstown Area	.....	.....	5.075	.....	.....	.....	.....	.....	8.775	.....	.....
Geneva	5.00	4.85	5.175	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	5.70	.....	5.775	.....	5.90	.....	.....	.....	8.775	.....	.....
Pueblo	.....	.....	.....	.....	.....	.....	.....	6.35	8.775	6.035	.....

IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot Rail steel	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill
Atlanta	$8.44	.....	$8.90[f]	$52.00	$57.00	
Baltimore	8.67	8.10[j]	.....	42.00	46.50	
Birmingham	8.35[f]	8.06[f]	8.06[f]	65.00[p]	71.00[p]	
Boston	9.10[a]	8.47	8.47	48.00	52.80	4 × 10 in., No. 8 & 10 wire— Joliet, Ill., Dixon, Pa., Minnesota, Pa. $3.66
Chicago	8.05	6.81[gu]	6.81[gu]	52.00[t]	63.00[t]	
Cincinnati	8.80[ab]	8.43[r]	.....	43.50[mn]	48.00[mn]	4 × 12 in., No. 8 & 12 wire— Joliet, Ill., Dixon, Pa., Minnesota, Pa. $3.43
Cleveland	8.57	6.79[c]	.....	43.50[t]	48.00[t]	
Dallas	9.95	8.50	8.50	57.00	63.00	
Denver	9.80	8.45[c]	.....	57.00[n]	63.00[n]	
Detroit	8.74	8.13	.....	56.00	63.00	6 × 6 in., No. 6 & 6 wire— Joliet, Ill., Dixon, Pa., Minnesota, Pa. $3.84
Kansas City	8.87[a]	8.43	.....	49.00	60.00	
Los Angeles	9.00[fd]	7.35	.....	57.50	63.50	
Minneapolis	8.66[d]	8.76[b]	8.76[b]	41.50	46.00[o]	
Montreal	8–8.75[fC]/8.05–8.45[A]	7.75/8.95[f]	7.75/8.95[f]	65.70[A]	70.20[A]	
New Orleans	.....	7.70[abs]	.....	45.50	50.00	
New York	8.91	7.85[wy]	7.85[wy]	50.50[no]	57.00[no]	
Philadelphia	8.04	7.14	.....	42.50[t]	47.00[t]	
Pittsburgh	7.43	6.87	.....	42.50	47.00	
St. Louis	8.45[s]	7.90[c]	7.90[c]	60.00[l]	62.00[l]	
San Francisco	8.95	8.90[j]	.....	47.50	53.00	
Seattle	9.35	8.35[e]	.....	62.00[nr]	68.00[nr]	
Toronto	8.45[e]	7.60	7.60	56.00[nq]	59.00[nq]	

Quantity extras, per cwt: under 100#, +$1; 100-399#, +50¢; 400-999#, +25¢; 1000-1999#, +10¢; 2000-4999#, base price; 5000-9999#, −10¢; 10,000-19,999#, −20¢; 20,000-39,999#, −30¢; 40,000 and up, −70¢

EXTRAS, per cwt—*Quantity: less than 700#, +50¢; 700-1499#, +25¢; 1500-7999#, +10¢. *Size: #3, #7 #6, #5, #10, #11 +50¢. *Bending: heavy, +$6; light, +$3 (except in New York City and surrounding metropolitan area where bending must be done on the job). *Engineering (details and placing from designs by others): over 500 tons, +45¢; 200-500 tons, +60¢ but not over $4500; 20-200 tons, +60¢ but not over $2000; 5-20 tons, +70¢ but not over $340; under 5 tons, +65¢ but not over $70. *Design only: +60¢.

*[t] Delivered *[a] 2000-9999# *[b] 10,000-19,999#, fob city *[c] 20 tons or over *[d] 10,000-19,999# *[e] Intermediate struct'l *[f] Incl. delivering in free zone *[g] CL *[h] list price; dominion tax exempt; add provincial and municipal taxes *[j] add dominion, provincial and municipal sales taxes *[k] intermediate and hard grade *[l] fob city *[n] delivered; contractor to do unloading *[m] copper alloy *[n] LCL *[o] asphalt coated *[p] del. of 500 sq. yd. or more. *[q] 3 lb *[r] 2% off for cash *[s] 2,000-4,999# *[t] add 15¢ del. *[u] add 0.25¢ switch *[v] incl 15¢ del. *[w] 5-10 tons *[x] add 5¢ switch *[y] add 30¢ del. *[z] add 10¢ del. *[A] American made. *[C] Canadian made. *[*] Aver. of Canadian & American.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE PRICE INDEX[a]	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city 6" Pr Cl. 150	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city 12" Sew Cl. I	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. s.s.	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 12 in. s.s.	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T 24 in. ds.	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T 36 in. ds.	CLAY DRAIN TILE ASTM C4-24 PER 1,000 ft., carload lots, f.o.b. 6 in.	CLAY DRAIN TILE ASTM C4-24 PER 1,000 ft., carload lots, f.o.b. 8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTM C 14-41 12 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTM C 14-41 24 in.
Atlanta	123.5	$1.64	$2.68	$.58	$1.00	$4.40	$14.50	$225.00		$0.88[m]	$3.25[m]
Baltimore	133.3	1.64	2.46	.665	1.28	5.06[s]	12.71	187.80	$289.20	1.01	2.75[m]
Birmingham	119.0	1.64	2.68	.46	.86	3.70[w]	10.37[w]	360.00[t]	440.00[t]	1.25[m]	2.75
Boston	136.2	1.66	2.46	.788[qrt]	1.502[qrt]	6.211[qrt]	.....	203.40[r]	312.60[r]	1.60[mg]	3.80[mg]
Chicago	134.1	1.64	2.46	.93[m]	1.78[m]	7.52[m]	21.16[m]	220.00[n]	330.00[n]	1.30	4.00
Cincinnati	128.2	1.66	2.55	.665[t]	1.282[5t]	4.90[5t]	12.80[5]	240.00	370.00	.85[m]	3.25[m]
Cleveland	134.9	1.66	2.55	.567[s]	1.093[5s]	4.54[5t]	11.787[t]	149.40[m]	231.60[m]	.85[m]	3.80[m]
Dallas	131.0	1.66	2.80	.439	.799	4.00[b]	9.17[b]	.....	.....	.63	1.88
Denver	141.4	1.73	2.80	.47[n]	.84[n]	3.73[n]	.....	.....	.....	.74[m]	2.50[m]
Detroit	135.3	1.66	2.55	.85	1.60	6.45	17.80	240.00[m]	370.00[m]	.95	3.82
Kansas City	131.7	1.66	2.55	.61	1.106	4.54	12.75	260.00	488.00	.90	2.90
Los Angeles	140.2	1.73	2.46	.74[l]	1.61[l]	6.42[l]	15.36[l]	360.00[l]	530.00[l]	1.02	3.02[f]
Minneapolis	143.1	1.68	2.68	.86[mo]	1.55[mo]	6.70[mo]	.....	.....	.....	1.76[A]	4.74[A]
Montreal	.....	.....	.....	1.02[u]	1.80[u]	6.30[u]	12.00[u]	.....	.....	1.17[A]	3.11[j]
New Orleans	126.1	1.64	2.68	.535	.93	5.44	.....	370.00[p]	560.00[p]	.85	2.90
New York	131.7	1.66	2.46	.102	1.94	7.61	19.58			1.50	3.00
Philadelphia	131.0	1.64	2.46	.65	1.25	4.95[s]	12.65[s]	300.00[t]	350.00[t]	1.60[A]	3.95[A]
Pittsburgh	136.1	1.66	2.46	.468[m]	.864[m]	3.88[m]	9.78[m]	182.00	244.00	1.08[A]	2.80[A]
St. Louis	130.1	1.64	2.55	.50	1.08	4.45	10.80	180.00[l]	360.00[l]	1.45[il]	3.10[il]
San Francisco	140.2	1.73	2.46	.78[d]	1.60[d]	6.72[d]	16.36[d]	320.00[l]	530.00[l]	1.06[m]	3.30[m]
Seattle	140.8	1.73	2.46	.67[b]	1.33[b]	6.84	.....	220.00[c]		1.05[A]	3.10[A]
Toronto	.....	.....	.....	.76	1.42[5]	6.00	.....	187.00	280.00	1.02	3.57

WROUGHT STEEL PIPE

(Full standard weight)

Discount from list; see footnotes

Mill	2½ to 6 in. Lap Weld Galv. %	2½ to 6 in. Lap Weld Black %	2½ & 3 in. Butt Weld Galv. %	2½ & 3 in. Butt Weld Black %	8 in. Galv. %	8 in. Black %	10 in. Galv. %	10 in. Black %	12 in. Galv. %	12 in. Black %
Lorain, Ohio	+0.75	13.50	4.75	21.00	4.75	26.50	4.75	26.50	4.75	26.50
Aliquippa, Pa.	+11.25	7.50	2.75	21.00	2.75	26.50	2.75	26.50	2.75	26.50
Sparrows Pt., Md.	+0.75	13.50	4.75	21.00	4.75	26.50	4.75	26.50	4.75	26.50
Youngstown, O.	+0.75	12.50	2.75	21.00	2.75	26.50	+5.25	19.00	+7.25	19.00
Indiana Harbor, Ind.	+0.25	12.50	4.75	21.00	4.75	26.50	4.75	26.50	4.75	26.50
Sharon, Pa.	+0.25	13.50	4.75	21.00	4.75	26.50	4.75	26.50	4.75	26.50
Wheatland, Pa.	+11.25	7.50	2.75	21.00	2.75	26.50	2.75	26.50	2.75	26.50
Elsa, Pa.	+0.75	13.50	4.75	21.00	4.75	26.50	4.75	26.50	4.75	26.50
Fontana, Calif.	+11.25	11.50	2.75	21.00	2.75	26.50	2.75	26.50	2.75	26.50
Berwind, W. Va.	+0.75	13.50	4.75	21.00	4.75	26.50	4.75	26.50	4.75	26.50
Benwood, W. Va.	+0.75	12.50	2.75	21.00	2.75	26.50	+5.25	19.00	+7.25	19.00
Indiana Harbor, Ind.	+0.25	12.50	4.75	21.00	4.75	26.50	4.75	26.50	4.75	26.50

† Threaded and coupled. ‡ 2½ to 4 in. § and 6 in. ¶ 6 in.

*[t] Delivered. *[a] PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 119.0; Burlington, N. J., 127.8. *[b] Extra strength ASTM C 200-44T *[c] 4-in., $130. *[d] SS381-A *[e] 30-in. *[f] 21 in. *[g] culvert pipe; reinforced, ASTM C 76-41 *[h] reinforced, ASTM C 76-41 *[i] reinforced, ASTM C 76-37 *[j] centrispun; no standard specs. in Canada *[k] 2% off for cash *[l] fob plant *[m] truck delivery *[n] LCL delivered, fob truck *[o] listed price based on LCL (no min.) *[p] freight allowed to destination in city *[q] ASTM C 13-40 *[r] CL fob origin, freight allowed *[s] 2 ft lengths *[t] 3 ft lengths *[u] CESA A 60-1941 specs. used *[v] standard strength *[w] as; add 20% for d.s.

* **WROUGHT STEEL PIPE:** Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. (*based on approx. $200 per net ton): Butt Weld ⅛ in., 8½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 78½¢. Lap Weld 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight rates plus 3% transportation tax to get destination price.

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: Butt Weld—1 in. black, + 66.54, galv., + 96.77; 1¼ in. black, + 66.54, galv. + 96.23, 1½ in. black, + 61.79 galv. + 91.22; Lap Weld—2½ in. to 3 in. black + 67.95 galv. + 96.77; 4½ in. to 6 in. black + 64.74 galv. + 90.66 Add freight rates plus 3% transportation tax to get destination price.

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Wareham**—SCHOOL—BA 2/19—Town, School Bldg. Comn., c/o Supt. Schools, Town Hall, high school and Pilgrim Memorial School addns., Marion Rd. $1,249,400. Plans deposit $50, refundable. Kilham, Hopkins, Greeley & Brodie, 9 Arlington St., Boston, archts. CD 8/3/56, under LB.

Mass., **Framingham**—WARD—BA 2/20—State, Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, M-729 Contr. 3, ward bldg., renovations, Cushing Hospital. $750,000. Plans deposit $60, refundable. Curtis & Riley, 45 Newbury St., Boston, archts. CD 1/5/56.

▲ **Conn., Wallingford** — SCHOOLS — BA 5/31 — Town, Town Hall, West Side Elementary School, $750,000; East Side Elementary School, Durham Rd., $550,000. Ketchum, Gina & Sharp, 227 E. 44 St., New York, N. Y., archts. Severud, Elstad & Krueger, 415 Lexington Ave., New York, N. Y., engrs. CD 12/11.

HEAVY CONSTRUCTION—LB & CA

▲† **Lane Constr. Corp.**, P.O. Box 911, Meriden, Conn. CA $1,776,930, est. $1,700,000. aircraft parking area, Naval Airfield, NBy 5050, Spec. 5050/56, BRUNSWICK, ME. Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass. CD 1/29, under LB.

▲† **J. F. White Contg. Co.**, 781 Circumferential Hy., Westwood, Mass. CA $3,474,860. replacing Pier 7, Boston Naval Shipyard, Charlestown, NBy 5100, Spec. 5100-56, BOSTON, MASS. First Naval Dist., 495 Summer St., Boston, Mass. Bids Jan. 29, awarded Jan. 30. CD 1/31, under LB.

† **Arden Engineering Co., Inc.**, 60 Taylor Dr., East Providence, R. I. LB $878,966, est. $1,044,250. addn. to heating plant, district heating sys., Westover Air Force Base, ENG-19-016-57-104, CHICOPEE FALLS, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. Bids Jan. 29. CD 1/15.

† **Golden & O'Brien**, 31 Greenwood St., Ludlow, Mass. LB $490,587, est. $481,266. site work and relocation for dormitories and mess hall, Westover Air Force Base, ENG-19-016-57-103, CHICOPEE FALLS, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. Bide Jan. 29. CD 1/17.

BUILDINGS—LB & CA

The Brattleboro Mutual Aid Assoc., Inc., 9 Harris Pl., Brattleboro, Vt., rejected bids Dec. 4, MUTUAL AID BLDG., BRATTLEBORO, VT. LB $539,948. Will readvertise. CD 12/13, under LB.

George B. H. Macomber Co., 25 Fordham Rd., Allston, Mass. CA Approx. $350,000. BANK, 42-62 Franklin St., BOSTON, MASS. First Federal Savings & Loan Assoc., 50 Franklin St., Boston, Mass. Bastile Halsey Assoc., 120 Tremont St., Boston, Mass., archts.

▲ **Crane Plumbing & Heating Co.**, 56 Elm St., Cambridge, Mass. CA Approx. $1,000,000. air-conditioned OFFICE, 136-140 Federal St., BOSTON, MASS. United Shoe Machinery Corp., 140 Federal St., Boston, Mass. A. Ehrenzella, Inc., 329 Washington St., Dorchester, Mass., engr.

Walsh Constr. Co., Inc., 119 Webb St., Salem, Mass. CA Approx. $908,000. HOSPITAL wing addn., Highland Ave., SALEM, MASS. Salem Hospital, 81 Highland Ave., Salem, Mass. CD 1/4, under LB.

▲† **Davison Constr. Co. Inc.**, 1306A Elm St., Manchester, Conn. CA $1,379,000. SHOP LABORATORY expansion, Hartford Research Center, NEG 19-016-57-21, MIDDLETOWN, CONN. U. S. Eng., 150 Causeway St., Boston, Mass. CD 1/11/55.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **Md., Upper Marlboro**—SCHOOL—BA 2/27—Prince George's Co. Bd. Educ., Buck Lodge Road Junior High School, Hyattsville, $1,400,000. Plans deposit $40, Paul Kea, 5109 Baltimore Ave., Hyattsville, archt. CD 10/4/56.

▲ **N. Y., Massena**—SCHOOL, etc—BA 3/1—Massena Central School Dist. No. 1, Massena, high school and bus garage, $3,000,000. Sargent, Webster, Crenshaw & Folley, 2112 Erie Blvd. E., Syracuse, archts.

HEAVY CONSTRUCTION—LB & CA

Paul M. Sterling Co., 114 Liberty St., New York 6, N. Y. LB $532,037. (5 bidders) addn. to central heating plant, Plattsburgh Air Force Base, ENG-57-195, PLATTSBURGH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Jan. 31. CD 1/23.

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

James J. Skelly, Inc., Media, Pa. CA $733,699. flexible base, bit. surf. 1 rein.-con. arch culvert, c. conc. pavement, 1 rein.-con. bridge 2.91 mi. from intersection of Stenton Ave. to near intersection of Church Rd., also from near intersection with Willow Grove Ave. northerly 2.91 mi., L.R. 46114-46116, Montgomery Co. CD 1/22, under LB.

BUILDINGS—LB & CA

▲ **Mars Associates & Normel Constr. Co.**, 271 Church St., New York 13, N. Y. LB $1,770,000. (9 bidders) general constr. PUBLIC SCHOOL 289, Kingston Ave. between Prospect Place and St. Marks Ave., BROOKLYN, N. Y. Director, Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Jan. 30. CD 1/18.

Furwood Gardens Homes, c/o Frederick T. Bock, archt., 1 Elmont Rd., Elmont, N. Y. Owner Builds. $970,000. addnl. sect. 57 HOUSES, Fifth Ave. east of Larkfield Rd., EAST NORTHPORT, N. Y.

Houghton College, Houghton, N. Y. Owner Builds. $350,000. CHAPEL and AUDITORIUM, HOUGHTON, N. Y. Glifford Broker Assoc., 18 Rockland Rd., Concord, N. H. archts. CD 8/24/55.

▲ **J. Rich Steers Co.**, 17 Battery Place, New York 4, N. Y. LB $4,572,000. (2 bidders) general constr., South Bronx MARINE TRANSFER STATION north shore of east River between Hunts Point Ave. and Farragut St., Bronx Boro, NEW YORK, N. Y. Dpt. Pub. Wks., Municipal Bldg., New York 7, N. Y. Bids Jan. 30. CD 1/3.

Benjamin Hochman Electric Co., 121 Willoughby St., Brooklyn 1, N. Y. LB $146,340. (11 bidders) electrical work. (New York, N. Y.).

▲ **White Constr. Co.**, 95 Madison Ave., New York, N. Y. LB $1,820,000 (10 bidders) Mount Olympus Women DORMITORY, SYRACUSE, N. Y. Syracuse University, Syracuse, N. Y. Harry A. and F. Curtis King, Marine Midland Bldg., Syracuse, N. Y., archts. Bids Jan. 29. CD 12/21/55.

▲ **William H. Schaaf**, Baptistown, N. J. CA $1,694,621, est. $1,500,000. REGIONAL HIGH SCHOOL addn., ANNANDALE, N. J. Bd. Educ., North Hunterdon Regional High School, Annandale, N. J. CD 12/19, under LB.

▲ **River View Estates**, c/o Lawyers Mortgage & Title Co., 133 Cedar Lane, Teaneck, N. J. Owner Builds. $1,000,000. 88 HOUSES, Carpentersville Rd., PHILLIPSBURG, N. J.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**

PROPOSED WORK

Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

▲ **S. L. Hammerman Organization, Inc.**, 16 Park Ave., Baltimore 1, Md. Owner Builds. $3,000,000. 250 two story, brick HOMES, Woodbourne Ave. and the Alameda, BALTIMORE, MD. Benjamin Brotman, 2118 Maryland Ave., Baltimore 18, Md., archt.

▲ **Blake Constr. Co.**, 33 E. St. S.W., Wash., D. C. CA $9,754,885. general constr. STATE OFFICE and POWER HOUSE, BALTIMORE, MD. State, Dpt. P. Imprvts., 506 Park Ave., Baltimore, Md. CD 12/10, under LB;
Otis Elevator Co., 1012 20 St. N.W., Wash., D. C. CA $529,837. elevator work (Baltimore, Md.).

SOUTH

BUILDINGS—SLC

Ky., Lexington — MANUFACTURING, etc. — Individual Drinking Cup Co., subsidiary of Dixie Cup Co., c/o The McPherson Co., archt., 408 S. Main St., Greenville, S. C., soon lets contract mfg. bldg., warehouse, railroad siding, $500,000. Frandel & Curtis, 130 Barr St., assoc. archts. CD 1/24.

HEAVY CONSTRUCTION—LB & CA

WEST VIRGINIA—State Rd. Comn., Charleston,
L. S. Coleman Co., St. Albans, W. Va. CA $618,774. relocation Dulls Creek, c. conc. 1.961 mi., Proj. F 226 (3), Clay Co. Bids Dec. 18, awarded Jan. 29. CD 12/26.

▲ **ALABAMA**—State Hy. Dpt., Montgomery,
Ala.—**Townsend Asphalt Co., Inc.**, 1015 19 Ave., E., Tuscaloosa, Ala. LB. $191,868., 5.288 mi. U.S. 80 Bet. Moscow and Demopolis, grading, draining and pavement, Marengo Co.; LB. $289,667. 5.708 miles grading and draining on part of U.S. 82 bet. Tuscaloosa and Duncanville;
Ala.—**Tillett Bros Constr. Co.**, Shelbyville, Tenn., LB. $371,511. 3.659 mi. grading and draining from S. to E. of Clanton on Interstate Rt. I 202 (Prop. A) Chilton Co.;
Ala.—**Strawhorn Constr. Co.**, Fulton, Miss., LB. $138,504. 9.206 mi. grading and draining Manti-Midway Rd., Conecuh Co.;
Ala.—**Floyd S. Milford**, 3732 5th Ave. N. Birmingham, Ala. LB. $631,229. 7.441 mi. grading, draining from West Point northwesterly toward Moulton, Cullman-Morgan Co.;
Ala.—**Ashburn & Gray Contrs.**, Huntsville, Ala., LB. $298,180, 14.106 mi. grading, draining Boaz Guntersville Rd., Etowah-Marshall Co.;
Ala.—**Roebuck Constr. Co., Inc.**, Roebuck Sprgs., Birmingham, Ala., LB. $266,900. 4.627 mi. grading, draining Berry Y to Eldridge Rd., Fayette Co.;
Ala.—**Newell Bros. Constr. Co.**, Hope Hull, Ala., LB. $682,707. 5.742 mi. grading, draining S.E. of Auburn on Interstate Rt. I-203, Prop. A, Lee Co.;
Ala.—**Walters Constr. Co.**, Troy, Ala., LB. $418,432., 7.334 mi. grading, draining Montgomery Mt. Meigs Rd., Prop. A., Montgomery Co. Bids Jan. 25. CD 1/16.

† **Walter P. Villere**, 4405 River Rd., New Orleans, La. LB $647,895 (2 bidders) channel excav. and control weir involving 2,752,550 cu. yd. excav., constr. weir, Ascension and Livingston Parishes, Inv. 57-175, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. Bids Jan. 22. CD 1/14.

Boh Bros. Constr. Co., 2400 Cypress St., New Orleans, La. LB $313,516 (3 bidders) Proposal No. 217, c. conc., b. conc. Holiday Dr. from General Meyer Ave. to Victory Dr., NEW ORLEANS, LA. City, Geo. Bosworth, purch. agt., City Hall, New Orleans, La. CD 12/16/55.

Hooter Bros., 1708 Hill St., Alexandria, La. LB $392,656. water sys., extensions, distr. and storage, PINEVILLE, LA. Mayor and Board, Pineville, La. Bids Jan. 22. CD 1/4;
Pittsburgh-Des Moines Steel Co., Praetorian Bldg., Dallas, Tex. LB $90,100. water sys. (Pineville, La.);
John A. Petty, Hy. 129, Rte. 3, Longview, Tex. LB $308,914. sewerage sys. (Pineville, La.).

BUILDINGS—LB & CA

Banks & Lee, Inc., Tower Bldg., Wash., D. C., LB $398,890 (9 bidders) Kent Gardens Elementary SCHOOL, FAIRFAX, VA. Fairfax Bd. Educ., Fairfax, Va. Bids Jan. 29. CD 1/8.

Perrilliat-Rickey Constr. Co., Box 13128, New Orleans, La. LB $413,000 (2 bidders) women's DORMITORY for College Campus, LAKE CHARLES, LA. McNeese State College, W. N. Cusic, pres., Lake Charles, La. Bids Jan. 22. CD 1/4.

▲† **D. R. Selby Constr. Co.**, 1411 Lebanon Rd., Nashville, Tenn. LB $2,130,956, supporting facilities, three DISPENSARY BLDGS., POST EXCHANGES, THEATER, 2 MOTOR REPAIR SHOPS, BATALLION HEADQUARTERS, CHAPEL, CLASS ROOM BLDGS., steam distr. sys., ENG-40-058-57-3, FORT CAMPBELL, KY. U. S. Eng., 306 Federal Bldg., Nashville, Tenn. Bids Jan. 29. CD 1/6.

Ranney Constr. Co., 4395 Poplar Level Rd., Louisville 17, Ky. LB $582,324 (11 bidders) FIELD OFFICERS' QUARTERS, 30 units, site imprvs., utilities, FORT KNOX, KY. U. S. Eng., 830 W. Broadway, Louisville,

(Continued on page 82)

Unique "PUSH-PULL" boat hauls twice as much oil . . . FASTER

East coast barge transportation presents unusual problems. Routes traverse both open and sheltered sections of the intracoastal waterways. Steuart Petroleum, an oil products marketing company operating in this area, needed to reduce round-trip time and increase the amount of tonnage hauled.

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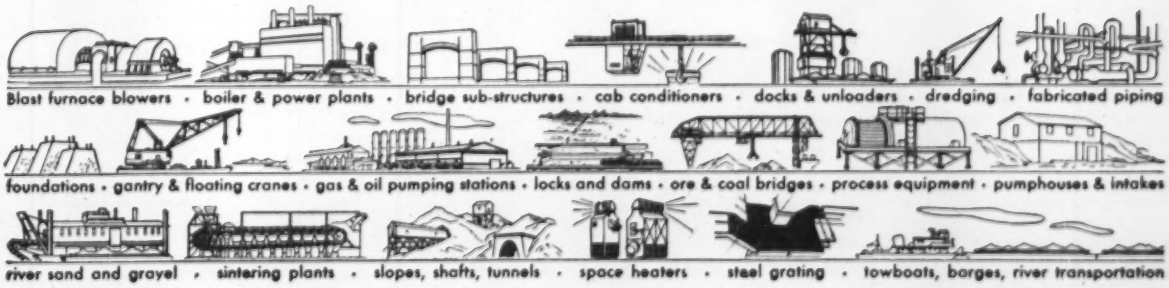
Blast furnace blowers • boiler & power plants • bridge sub-structures • cab conditioners • docks & unloaders • dredging • fabricated piping
foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes
river sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation

(Continued from page 80)

Ky. Arrasmith & Tyler, Madrid Bldg., Louisville, Ky., archts. Bids Jan. 29. CD 12/28.

Holiday Inns of America, Inc., 4985 Summer Ave., Memphis, Tenn. Separate Contracts. $500,000. MOTEL, 78 units, restaurant, 25x50 ft. concrete swimming pool, OWENSBORO, KY.

▲ **Whittenberg Constr. Co.**, 2214 S. Floyd St., Louisville 17, Ky. LB $1,306,000 (10 bidders) County HIGH SCHOOL, OWENSBORO, KY. Daviess County Bd. Educ., Owensboro, Ky. Bids Jan. 29. CD 1/14.

MIDDLE WEST

BUILDINGS—BA

Ill., Chicago—CHURCH—BA 2/19—St. Thomas More Parish, 2606 W. 82nd St., church, 81st and California Sts. $800,000. Barry & Kay, 53 W. Jackson Blvd, archts. CD 6/13.

Ill., Chicago—METAL RESEARCH—BA 2/27—Armour Research Foundation, Ill. Institute of Technology, 3300 S. State St., metal research bldg. addn., 3350 S. Federal St. $575,000. Ludwig Mies Vander Rohe, 230 E. Ohio St., archt. CD 4/11.

▲ O., Ravenna—HOSPITAL—BA 3/14—Robinson Memorial Portage Co. Hospital, Ravenna, Robinson Memorial Hospital remodeling and addns. $1,825,000. Plans deposit $50. Dan A. Carmichael, 5 E. Long St., Columbus, O., archt. CD 8/7.

BUILDINGS—SLC

Ill., Chicago—WAREHOUSE—General Mills, Inc., 400 Second Ave., Minneapolis, Minn., soon lets contract warehouse, 104th St. and Calumet River. $500,000. CD 11/13.

HEAVY CONSTRUCTION—LB & CA

▲ **Hunkin-Conkey Constr. Co.**, 1740 E. 12 St., Cleveland, 14, O., CA, $3,827,000, est $4,500,000. Contracts C-1, 2, 3 and 4, general construction, Clague Rd. Filtration Plant, CLEVELAND, O. City, Dpt. P. Utilities, City Hall, Cleveland, 14, O. Bids Jan. 18, awarded Jan. 30. CD 1/22, under LB.
Doan Electric Co., 725 Hamilton Ave., Cleveland, O., CA $572,400. Electrical Contract C-4, (Cleveland, O.).

▲ ILLINOIS—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,
Gust K. Newburg Constr. Co. & Hoyle-Newburg Constr. Co., 2040 N. Ashland Ave., Chicago, Ill., LB $12,193,953, Contracts T-12-A, T-12-B and T-12-C, grading, drainage, paving, precast concrete and steel bridges, 12.201 mi. beginning near Duffy Lane to near State Rte 120 Lake and Cook Counties. Bids Jan. 31. CD 1/10.

▲ ILLINOIS—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,
Arcole Midwest Corp., 3225 Main St., Skokie, Ill., LB $3,814,266. Contr. N-6-A, grading, drainage, paving, etc., precast concrete bridges, 4.64 mi. from E. of Fox River to E. of Bartlett Rd., Kane Co. Bids Jan. 31. CD 1/11.

▲ ILLINOIS—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago.
Arcole Midwest Corp., 3225 Main St., Skokie, Ill., and **M. J. Boyle & Co.**, 2480 Easton Ave., Chicago, Ill., LB $2,583,780. Section 7-D-3 and 7-E-3 furnishing, placing conc. deck, rein.-steel hand-rail pipe drain, Calumet Skyway Toll Bridge, from Ave. N. N. to Ill.-Ind. State Line. Bids Jan. 28. CD 1/10.

▲ **Gust K. Newberg Constr. Co.**, 2040 N. Ashland Ave., Chicago, Ill., LB $9,867,000. Central District Filtration Plant with cofferdam N. of Navy Pier and E. Lake Shore Dr., CHICAGO, ILL. City, Dpt. Purchases, Contracts & Supplies, City Hall, Chicago, 2, Ill. Bids Jan. 17. CD 12/11.

Fattore Co., 6500 E. 11 Mile Rd., Centerline, Mich. CA $469,000. WS-75 E, Coyle-Kendall 72 in. water main Fullerton Ave. to Whitcomb Ave., DETROIT, MICH. City, Water Dpt., 735 Randolph St., Detroit 36, Mich. Bids Jan. 10. CD 12/27.

BUILDINGS—LB & CA

Freeman Constr. Co., R. D. 3, Wooster, O., LB $750,000 (5 bidders) general constr. LIBRARY addns., alterations, Kent State University, KENT, O. State Dpt. P. Wks., 705 Ohio Dpts. Bldg., Columbus, O. Bids Jan. 28. CD 1/7.

▲ **Foundation Co.**, 57 Williams St., New York, N. Y., CA general constr. of Stratton STEAM PLANT, STRATTON, O. Total est. $116,000,000. Ohio Edison Co., 47 N. Main St., Akron, O. CD 9/24;
Raymond Concrete Pile Co., 140 Cedar St., New York, N. Y. CA piling, Stratton Steam Plant (Stratton, O.);
Townsend & Bottum, Box 368, Ann Arbor, Mich., CA screenhouse, maintenance, bldg. and intake tunnels for Stratton Steam Plant (Stratton, O.);
Savin Constr. Corp., 10 Village St., West Hartford, Conn., CA, discharge tunnels, Stratton Steam Plant (Stratton, O.).

Weddle Bros., S. Adams St., Bloomington, Ind., LB $404,471 Base Bid, general contract, TRAINING INSTITUTE, BLOOMINGTON, IND. Bd. Trustees, Indiana University, Bloomington, Ind. Bids Jan. 10. CD 12/17.

▲ **Art Institute of Chicago**, S. Michigan and E. Adams St., Chicago, Ill., rejected bids Jan. 16, 3 story ADMINISTRATION BLDG. addn., and Blackstone HALL, CHICAGO, ILL. Est. $1,700,000. New bids being taken. CD 12/31.

▲ **LaSalle Constr. Co.**, 434 S. Dearborn St., Chicago, Ill., CA $1,500,000. NURSES QUARTERS and HOSPITAL addn., OAK PARK, ILL. West Suburban Hospital, 518 N. Austin Blvd., Oak Park, Ill. CD 3/8/55.

▲ **Houseman-Spitzley Corp.**, 406 Washington Blvd., Detroit 26, Mich. Owner Builds. $1,200,000. Upper Long Lake Development, 50 HOUSES, Marie Cirdle, McClintock and Square Lake Rd., BLOOMFIELD, MICH.

▲ **Stephen-Allen Corp.**, 2429 Cadillac Tower, Detroit, Mich. CA Est. $2,000,000. Orchard Hills, 107 HOMES Tamara Dr., Aspen Dr., Quince Dr., Silvery Lane, Borchart Dr., Sycamore Dr., FARMINGTON, MICH. McCann Realty, 26661 Coolidge Hy., Oak Park, Mich.

▲ **General Enterprises**, c/o Russell Bauer, 20316 Hoover St., Detroit 5, Mich. Owner Builds. $3,200,000. 2,500 HOUSING DEVELOPMENT, FRASER, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲† N. M., Alamogordo—TAXIWAYS—BA 2/28—U. S. Eng., Box 1538, Albuquerque, taxiways and aprons, Holloman Air Force Base, ENG-29-005-57-51, $1,400,000. CD 1/23.

BUILDINGS—BA

▲ **Mo., St. Louis**—OFFICE—BA 2/28—Ralston-Purina Co., 835 S. Eighth St., Zone 2, 6 story, bsmnt., brick, rein.-con. office addns., alterations, incl. 40,000 sq. ft. floor space and 3 story top addn. to present 3 story bldg. $1,500,000. Russsell, Mullgardt, Schwarz, Van Hoefen, 1620 Chemical Bldg., 721 Olive St., St. Louis, Zone 1, archts. CD 7/19.

▲† N. M., Los Alamos—SIGMA BLDG.—BA 4/4—Atomic Energy Comn., Los Alamos, 165,000 sq. ft. Sigman Bldg., Atomic Energy Comn. $3,000,000-$3,500,000. CD 6/29/51.

HEAVY CONSTRUCTION—LB & CA

▲† **Fischer-Frichtel Constr. Co.**, 8703 St. Charles Rock Rd., St. Louis, Mo. CA $1,115,024; est. $1,156,677. 76 family housing units, Whiteman Air Force Base, Eng-23-028-57-40, KNOB NOSTER, MO. U.S. Eng., Federal Office Bldg., Kansas City, Mo. Bids Jan. 22, awarded Jan. 25. CD 1/28, under LB.

† **Martin K. Eby Constr. Co.**, 610 N. Main St., Wichita, Kan. LB $403,761, est. $423,627. (2 bidders) parking apron, removal and relocation of existing facility, McConnell Air Force Base, ENG-57-46, WICHITA, KAN. U. S. Eng., Federal Office Bldg., Kansas City, Mo. Bids Jan. 29. CD 1/4.

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▲† **Donovan Constr. Co.**, 1725 Carroll Ave., St. Paul, Minn., LB **$3,242,000**, est. over $500,000. constr. and installing roller gates, hoists and cranes Anzalduas Dam on Rio Grande River, Spec. AN-6037-A Vol. 1 of 2, TEXAS, International Boundary & Water Comn., U. S. A. and Mexico, U. S. A. Sect. Box 1859, El Paso, Tex. Bids Jan. 30. CD 1/17.

▲ **TEXAS**—State Hy. Dpt., Austin,

J. A. Raines, Constr., P.O. Box 935, Muskogee, Okla. CA **$2,040,101**, Cont., IV, 0.723 mi. Corpus Christi Ship Channel Bridge, plate girder units and deck slab for truss units, Hy. US181, Proj. U 204 (9), Nueces Co. Bids Jan. 23, awarded Jan. 25. CD 1/28, under LB.

▲ **TEXAS**—State Hy. Dpt., Austin,

Tex.—**Collins Constr. Co. of Texas**, P.O. Box 1192, Austin, Tex., CA **$655,988**, flexible base, two course surf. tr. 5.677 mi. Hy. US 180. Proj. F 382 (7), Palo Pinto Co.;

Tex.—**J. M. Dellinger, Inc.**, P.O. Box 4227, Corpus Christi, Tex., CA **$555,303**, foundation course, flexible base, two course surf. tr. and b. conc. 10.055 mi. Hy. US 281. Proj. F 723 (3), Burnet and Blanco Counties;

Tex.—**Gilvin-Terrill, Inc.**, P.O. Box 2268, Amarillo, Tex., CA **$546,477**, flexible base, b. conc., 18.917 mi. Hy. US 87, Proj. F 497 (8), Dallam Co.;

Tex.—**Gulf Bitulithic Co.**, P.O. Box 2572, Houston, Tex. CA **$508,549**, shell conc. base and b. conc. base 1.557 mi. Hy. SH 87. Proj. F 654 (6), Jefferson Co.;

Tex.—**J. A. Long**, L. K. Long & M. E. Worrell, Jr., Inc., P.O. Box 180, McKinney, Tex., CA **$593,003**, grading; and structures 3.598 mi. Hy. US 77. Proj. I 230 (5), Denton Co.;

Tex.—**Henry L. Stafford**, P.O. Box 1047, Lubbock, Tex. CA **$533,109**, flexible base, b. conc. 29.882 mi. Hy. SH 51, Proj. S 649 (6), Ector and Crane Counties;

Tex.—**C. Hunter Strain**, P.O. Drawer 1631, San Angelo, Tex. CA **$1,187,154**, flexible base, hot mix b. conc. 5.344 mi. Hy. US 80, Proj. I 444 (40), Nolan Co. Grand total $4,579,583. Bids Jan. 23, awarded Jan. 25. CD 1/28, under LB.

▲ **TEXAS**—State Hy. Dpt., Austin,

Tex.—**Trotti & Thomson, Inc.**, P.O. Box 70, Beaumont, Tex., CA **$1,563,132**, c. conc. 1.188 mi. Hy. US 90, Proj. I 56 (14), Jefferson Co.;

Tex.—**Harrison Eng. & Constr. Corp.**, 3706 Broadway, Kansas City, Mo., CA **$1,006,592**, c. conc. 4.935 mi. Hy. SH 6, Proj. F 471 (20) Brazos Co.;

Tex.—**Uvalde Constr. Co.**, P.O. Box 10286, Dallas, Tex. CA **$517,010**, c. conc. pavement, flexible base shoulders and hot mix b. conc. pavement 3.575 mi. Hy. US 77, Proj. I. 117 (11), Denton Co.;

Tex.—**Cooper & Woodruff, Inc.**, 204 Mays Bldg., Amarillo, Tex., CA **$896,695**. flexible base, hot mix b. conc. 9.033 mi. Hy. US 80, Proj. I 525 (6), Mitchell Co. Grand total $3,983,429. Bids Jan. 22, awarded Jan. 25. CD 1/25, under LB.

Slovak Brothers, Inc., Box 5096, Corpus Christi, Tex. **$419,018**. Gollihar Storm Sewer extensions, CORPUS CHRISTI, TEX. City, City Hall, Corpus Christi, Tex. Bids Jan. 16. CD 12/31.

▲† **Coker Constr. Co.**, 430 WOW Bldg., **Peter Kiewit & Sons**, 1024 Omaha Natl. Bank Bldg., and **Condon-Cunningham**, 4229 Lafayette St., all Omaha, Neb., LB **$14,434,000**, est. $11,283,651. Fremont Canyon Power Plant and power conduit, Missouri River Basin Proj. Spec. DC 4801 WYOMING. Bureau Reclamation, Dpt. Interior, Glendo, Wyo. Bids Jan. 31. CD 1/21.

BUILDINGS—LB & CA

† **Freeto Constr. Co.**, Pittsburgh, Kan. LB **$471,426**. (6 bidders) family HOUSING, ENG.-23-028-57-49, FORT LEONARD WOOD, MO. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Jan. 29. CD 1/11.

▲ **Neil Singleton**, Box 2130, Amarillo, Tex., CA **$1,122,600**. Wm. B. Travis JUNIOR HIGH SCHOOL, AMARILLO, TEX. Amarillo Independent School Dist., Amarillo, Tex. Bids Jan. 22. CD 12/14.

▲ **B. L. McGee Constr. Co.**, Box 782, Austin, Tex. LB **$1,407,427**. Bid No. 1, State OFFICE BLDG., AUSTIN, TEX. State of Texas, c/o State Bldg. Comn., 110 W. 14th St., Austin, Tex. CD 12/28.

▲ **Marxen & Son**, 3627 Wertheimer Rd., Houston, Tex. LB **$1,203,197**. CHURCH PLANT, HOUSTON, TEX. First Christian Church, 1503 Main St., Houston, Tex. Walter P. Moore, 2 Pinedale St., Houston, Tex., consult. engr. CD 1/22.

Albert A. Meyerson Co., Box 14005, Houston, Tex. CA **$664,195**. new wing for Public LIBRARY and imprvs., HOUSTON, TEX. City, City Hall, Houston, Tex. Bids Jan. 9. CD 1/28.

Modern Realty Co., c/o Tanglewood Apartments, c/o Allen Field, c/o Jinx Dobbins, Finger Co., 3131 Calhoun Rd., Houston, Tex. owner, CA **$500,000**. 11 two-story APARTMENT bldgs., 1315 S. Post Oak Rd., HOUSTON, TEX.

▲ **Hill & Combs**, 321 Melrose Place, San Antonio, Tex., CA **$1,350,000**. Terrell Plaza Shopping Center, Austin Hy. near The Westerner, SAN ANTONIO, TEX. L. R. Pletz & Associates, South Texas Blvd., San Antonio, Tex. Marmon & Mok & Jerry Rogers, South Texas Blvd., San Antonio., Tex., archts. CD 1/11.

▲ **F. L. Scott & Son**, 2042 W. Kings Hy., San Antonio, Tex., CA, **$1,389,839**, est. $1,250,000. JUNIOR-SENIOR HIGH SCHOOL, SAN ANTONIO, TEX. North East Independent School Dist., Lockhill-Selma Rd., San Antonio, Tex. Bids Jan. 30.

▲ **Hightower & Lubrecht**, Missoula, Mont. CA Approx. **$1,000,000**. Total est. $6,000,000-$8,000,000. general constr. PULP PAPER PLANT, MISSOULA, MONT. Waldorf Paper Products Co., 2280 Wabash Ave., St. Paul, Minn. CD 10/30.

▲ **Stearns-Roger Mfg. Co.**, 660 Bannock St., Denver, Colo., CA **$5,000,000**. design and construct POWER PLANT EXPANSION incl. 22,000 kw. steam turbine generating plant and constr. sub-station, CANON CITY, COLO. Southern Colorado Power Co., 115 W. 2 St., Pueblo, Colo.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., Los Angeles**—BA 2/27—Los Angeles County Sanitation District No. 2, 2020 Beverly Blvd., 5,900 ft. 78 in. rein.-con. pipe, Joint Outfall Sewer "H", Unit 1B, Section 1B, Compton, $500,000; 6,600 ft. 78 in. rein.-con. pipe Joint Outfall Sewer "H", Unit 1B, Section 1A, Compton, $500,000. Plans deposit $5 each.

Calif., Monrovia—BA 3/4—City, City Hall, 6.5 m.g. rein.-con. "Cloverleaf Reservoir", Spec. No. 9, $500,000. Plans deposit $20, James M. Montgomery, 15 N. Oakland Ave., Pasadena, engr. CD 9/23/55.

† **Calif., March Air Force Base**—DINING HALL—BA 3/5—U. S. Eng., 751 S. Figueroa St., Los Angeles, airmen's dining hall, ENG-04-353-57-64, $400,000. CD 8/24.

BUILDINGS—BA

† **Wash., Pacific Beach**—PERSONNEL, etc.—BA 2/21—Pub. Wks. Officer, 13th Naval Dist. U. S. Naval Station, Seattle, 2 story 26,200 sq. ft. personnel bldg. 1 story, 7,100 sq. ft. special service bldg., 1 story, 4,500 sq. ft. bachelor officers' quarters other bldg. rein.-con. constr. Spec. 6594156. Plans deposit $150. Extended date. CD 12/19.

Calif., Costa Mesa—WARD BLDGS.—BA 2/27—Calif. Div. Architecture, 1100 S. Grand Ave., Los Angeles, two 2 story ward bldgs., two 1 story security ward bldgs., covered passages to link bldgs and site development at Fairview State Hospital. $3,275,250. Plans deposit $100. CD 2/3/56.

▲ **Utah, Provo**—MEN'S DORMITORY—BA 2/28—Latter Day Saints Church, 47 E.S. Temple St., Salt Lake City, men's dormitory, for Brigham Young University. $2,400,000. Arnold H. Ehlers, 125 N. Main St., Salt Lake City, and Lowell E. Parish, 325 Dooly Bldg., Salt Lake City, archts. Extended date. CD 1/22.

HEAVY CONSTRUCTION—LB & CA

▲ **IDAHO**—State Hy. Dpt., Boise,

Idaho—**Wausgaard Constr. Co.**, Logan, Utah, CA **$771,029**, grading and draining on 11.142 mi. U. S. 26. Bonneville Co. Bids Jan. 22. CD 1/31.

NELSON STUD AT THE WELD!

Cross section shows why a NELSON stud stays put: the arc forms a molten pool of steel into which the stud is plunged for complete fusion across base of stud.

Send for complete information about the **$1,500 GREGORY AWARD** for the most significant contribution in the field of stud welding.

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Division of Gregory Industries
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"I use my 4T Pow-R-Ditcher for foundation cuttings and footings. Also install water lines. Used it to cut 2500 feet of ditch in less than 5 hours for Phillips Oil Co. It is small, rugged, very maneuverable and does a superior digging job even in sticky gumbo soil. Very easy to transport from one job to another in a pick-up truck."

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BOST DITCHING SERVICE
Friendswood, Texas

ONLY 48" WIDE, 6' HIGH, 13' LONG

An ideal machine for laying gas pipe, service lines and digging home foundation footings. Digs 6" to 14" wide and down to 4½' deep. Thousands in use. Same size moving parts as larger Pow-R-Ditcher Models. Write for complete information on the complete line.

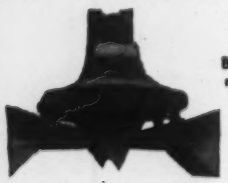
Some Excellent Distributor Territory Available!

VERMEER MFG. CO., Pella, Iowa

BROWNHOIST bridge and crane BUCKETS

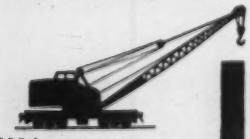
we have the type and size to best handle the job, dependent on material and equipment

Open-type grab buckets and link-type buckets for bridge cranes, fast-plant unloaders and large gantry cranes are available in capacities from 35 to 400 cubic feet.



Because of their simplicity of design and rugged construction, Brownhoist buckets (such as the link-type left or the open type grab bucket above) withstand extremely severe abuse. Abrasion-resistant alloy steel nose plates protect against coarse materials.

Brownhoist clamshell buckets (right) in capacities from ½ cu. yd. to 3 cu. yds. are used with cranes for handling coal, ore, sludge, slag, rock or wet clay. They're engineered (as a result of over 80 years experience) to take full bites, year after year with trouble-free operation. Write today for catalog.



INDUSTRIAL BROWNHOIST CORPORATION
BAY CITY, MICHIGAN

185-A

Idaho—**Earl McNutt**, Eugene, Ore., LB **$449,938**, constr. roadway bit. surface and 237 ft. concrete bridge on 2.33 mi. U. S. 95 and crushed rock in stockpiles. Adams and Idaho Counties. Bids Jan. 22. CD 1/7.

▲ **UTAH**—State Rd. Comm., State Capitol, Salt Lake City,

Utah—**W. W. Clyde**, Springville, Utah. LB **$1,099,369**, road mix bit. surf. 18.65 mi. on F. A. Rte. No. 35 between Johnson Jct. east of Kanab, northwesterly to Buckskin, Wash., F. A. Proj. F-35-1, Kane Co.

Utah—**Germer, Abbott & Waldron Constr. Co.**, Fremonton, Utah. LB **$555,159**, bit. surf. for 8.5 mi. on F. A. Rte. No. 35 from 1 mi. east of Paria Creek, easterly, F. A. Proj. F. L. P. 32 (2), 1st contract and S. P. 1585, Kane Co. Bids Jan. 29. CD 1/22.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

Calif.—**Thompson Constr. Co.**, 8330 Hindry Ave., Los Angeles, Calif. LB **$2,658,810**. (10 bidders) grading, paving 1.5 mi., 6-lane divided freeway in Los Angeles on Glendale Freeway, constr. 6 structures pumping plant, and five rein.-con. retaining walls, Los Angeles Co.

Calif.—**Charles MacClosky Co.**, 15900 S. Broadway, Gardena, Calif. LB **$497,695**. (11 bidders) constr. interchange on San Bernardino Freeway in West Covina at Barranca St., Los Angeles Co. Bids Jan. 31. CD 1/4.

Ward Constr. Co., 2509 W. Rosecrans Ave., Compton, Calif., LB **$663,161**. (5 bidders) arterial water sys. for Imprvt. Dist. 1, CARLSBAD, CALIF. Carlsbad Municipal Water Dist., City Hall, Carlsbad, Calif. Bids Jan. 17. Boyle Eng. Co., 3913 Ohio St., San Diego, Calif., engrs. CD 10/30;

Southwest Welding & Mfg. Co., 3201 Mission Rd., Alhambra, Calif., LB **$141,500** (5 bidders) 2,500,000 gal. steel regulating reservoir and 1,700 lin. ft. 24-in. water pipe, (Carlsbad, Calif.).

▲ **American Pipe & Constr. Co.**, P.O. Box 3428, Terminal Annex, Los Angeles, Calif. CA **$8,492,547**. constr. siphons for Colorado River Aqueduct between Rice and Whitewater Sts., Spec. 504, LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern Calif., 303 W. 3 St., Los Angeles, Calif. Bids Dec. 13, awarded Dec. 18. CD 12/17, under LB.

▲ **R. V. Lloyd & Co.**, P.O. Box 128, Coachella, Calif. CA **$7,272,396**. Spec. 509, constr. 5½ mi. siphons from Town of Earp to Town of Desert Hot Springs, San Bernardino and Riverside Counties, LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern Calif. 303 W. 3 St., Los Angeles, Calif. Bids Jan. 16, awarded Jan. 22. CD 1/18, under LB.

▲† **Dale Benz, Inc.**, 1912 W. Grant St., Phoenix, Ariz. LB $1,057,000. (1), $1,015,000 (2) (8 bidders) replace roofing on Hangars No. 2 and 3, remove existing roof and replace some, Naval Air Station, NBy 6953, MOFFETT FIELD, CALIF. Dist. P. Wks. Office, 12th Naval Dist., San Bruno, Calif. Bids Jan. 23. CD 12/31.

BUILDINGS—LB & CA

▲ **Bechtel Corp.**, 220 Bush St., San Francisco, Calif. CA 40,000 bbl. REFINERY, ANACORTES, WASH. Total est. $60,000,000. The Texas Co., 135 E. 42 St., New York, N. Y. CD 2/10/56;

American Bridge & Iron Co., 332 S. Michigan Ave., Chicago 4, Ill. CA tankage (Anacortes, Wash.).

Wick Constr. Co., 720 N. 35 St., Seattle, Zone 3. CA **$566,666**, est. $425,000. (3 bidders) 94x187 ft. rein.-con. CHURCH for St. Edwards Parish, SEATTLE, WASH. Archbishop of Seattle, 907 Terry St., Seattle, Wash. Bids Jan. 23. CD 12/12.

Standard Constr. Co., 315 E. 25 St., Tacoma, Wash. LB **$496,978**. (7 bidders) general constr. three 1 story, bldgs. totaling 75,000 sq. ft. frame constr. for H. F. Hunt JUNIOR HIGH SCHOOL, S. 8 and Mildred St., TACOMA, WASH. School Dist. No. 10, Central School Bldg., Tacoma, Wash. Bids Jan. 29. CD 1/9.

Ford J. Twaits Co., 507 S. Bixel St., Los Angeles, Calif. CA $395,000. 2 story, rein.-con. TELEPHONE BLDG. addn., BALDWIN PARK, CALIF. General Telephone Co., 2020 Santa Monica Blvd., Santa Monica, Calif. Albert C. Martin & Assoc., 333 Beaudry St., Los Angeles, Calif., archts.-engrs.

▲ **R. G. Trigg**, 6325 Atlantic Ave., Long Beach, Calif. CA $1,014,328. 95x110 ft. stucco HOUSING, 4881 S. St. lot 173 to 3111, BUENA VISTA, CALIF. Acron Investments, Inc., 6325 Atlantic Ave., Long Beach, Calif.

MacIsaac & Menke, 3440 E. 14 St., Los Angeles, Calif. CA $521,047. part 2 and 1 story, STOREROOM and yard facilities, 5010 Azusa Canyon Rd., COVINA, CALIF. General Telephone Co., 2020 Santa Monica Blvd., Santa Monica, Calif. CD 1/17, under LB.

▲ **Stiglebauer Bros.**, 8148 E. Phlox St., Downey, Calif. CA $1,226,661, est. $900,000. steel, rein.-brick 67,000 sq. ft. Downey SENIOR HIGH SCHOOL, DOWNEY, CALIF. Downey Union High School Dist., 8581 E. Forestone Blvd., Downey, Calif. Bids Jan. 22, awarded Jan. 23. CD 1/25.

Crown Constr. Co., 5059 W. Pico Blvd., Los Angeles, Calif. LB **$818,171**. 1 story, frame, stucco Cimarron Ave. and Purche (132 St.) SCHOOLS, Gardena and Hawthorne, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Jan. 25. CD 1/17.

Beacon Constr. Co., 730 Clementina St., San Francisco, Calif. LB **$460,066**. (1 bidder) two 1 story, 8,120 sq. ft. brick DORMITORIES, 1 story, 8,430 sq. ft. VOCATIONAL BLDG., DINING ROOM, CLASSROOM addns., ADMINISTRATION and COMMISSARY BLDGS. addn., security fence at Paso Robles School for Boys, PASO ROBLES, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Jan. 30. CD 1/9.

Barclay Development Co., 343 Hawthorne Way, Hawthorne, Calif. Owner Builds. $840,000. 96 DWELLINGS, 1,000-

(Continued on page 86)

HOW JIM GUENTHER DUG TWO BASEMENTS MILES APART IN 7 HOURS, 45 MINUTES

Ann Arbor, Michigan—Two basements in one day with a BAY CITY Model 30—½ yard hoe . . . that's the story told here by Guenther Brothers, excavating and grading contractors. "Differential steering with plenty of turning power", reported Jim Guenther, "makes maneuvering the machine around corners and tight spots a cinch."

First Excavation 315 Yards

At 8:00 A.M. Guenther Brothers started the first excavation, moving 315 yards of dirt.

The job was completed in just four hours and fifteen minutes. The BAY CITY hoe was then loaded onto a low-boy. After lunch, the equipment was hauled to the second site, arriving there at 1:15 P.M.

Second Basement Dug in Less Time Than First

In just 3 hours and 50 minutes the second excavation was complete, including the entire job of reloading the equipment. Size of the second job: over 300 yards of dirt!

265

BAY CITY Hoe's Fuel Consumption Low

In moving the sum total of some 615 yards of dirt (total work time, 7 hours and 45 minutes), Guenther reported that the BAY CITY hoe used approximately 18 gallons of diesel fuel, representing a considerable saving over the 30 gallons used by other machines, on the same type jobs.

With a work-record like this, it is little wonder that Guenther Brothers reputedly have dug and back-filled an estimated 50% of all house basements in the Ann Arbor area during the past ten years.

A Few of The BAY CITY Features

• Two-shoe swing clutches with cast iron friction wheels for best heat dissipation and resistance to wear • One-piece cast alloy steel bases for greater strength and desirable weight • Long, wide crawlers for added stability • Ball-bearing drums in tandem actuated by power booster clutches for easiest operation • Helical cut gears for main power give quiet, smooth operation • Self locking worm and worm wheel boom hoist raises or lowers boom under power • Choice of large cubic inch displacement gas or diesel engines provide maximum power • Heavy duty differential permits sharp or gradual turns with power on both crawlers • Available attachments to operate as crane, clamshell, dragline, shovel, hoe.

BAY CITY Specifications and Catalogs Available

Model	Rated Capacity	Maximum Bucket Width	Boom Length	Maximum Digging Depth	Maximum Reach	Rated Net H.P.	Catalog
30	½	36″	17′0″	17′6″	26′5″	57	30-I
45	¾	42″	20′0″	22′0″	32′4″	76	45-I
60	1	50″	22′0″	23′3″	34′9″	113	60-B
71	1½	54″	26′0″	26′8″	39′5″	123	71-A

BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

GOT THIS?

(Predraining Problem)

GET THIS!

(Skilled Wellpoint Engineering)

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WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

Specify

AMERICAN TUBULAR TOWERS

The standard for over a quarter of a century

ATE designs are available with material platform and/or concrete handling equipment in heavy and light duty models.

All Tubular Members GALVANIZED...

dichromate galvanized to prevent rust. This feature means smooth, trouble-free assembly and longer work life.

AMERICAN TUBULAR ELEVATOR CO.
Div. Universal Mfg. Corp.
Zelienople, Pa.

(Continued from page 84)

1,044 sq. ft., Clintwood, Cabana and Tonapah Aves., Shaver and Blackwood Sts., PUENTE, CALIF.

Codding Enterprises, 4000 Montgomery Dr., Santa Rosa, Calif. Owner Builds. $500,000. constr. SHOPPING CENTER, State St. and River Rd., UKIAH, CALIF.

CANADA

BUILDINGS—BA

Ont., Toronto—GARAGE, etc.—BA 2/20—Canadian National Rys., Central Region, W. E. Griffiths, ch. engr., Union Station, Toronto, 2 story, 121x310 ft. rein.-con., brick express garage, communications and office bldg. addn., 151 Front St. W. $600,000. Plans deposit $100.

BUILDINGS—SLC

Ont., Hamilton—PLANT—Hamilton Spectator, Ltd., 115 King St. E., soon lets contract newspaper plant addn., alteration. $600,000. Wm. R. Souter & Assocs., 36 James St. S., archts. CD 2/21/50.

HEAVY CONSTRUCTION—LB & CA

▲† **Marine Industries Ltd.**, 1405 Peel St., Montreal, Que., CA $13,411,000. dredging and channel imprvs. Cornwall island, International Rapids, Section of Seaway, Cornwall, ONTARIO. St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids Jan. 22, awarded Jan. 28. CD 12/17.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto,
Cart Paving Co. Ltd., 419 Cherry St., Toronto, Ont., CA $957,473 (5 bidders) granular base, concrete paving 4.93 mi. Hy. 401, Windsor entrance from Hy. 98 to Hy. 3 and Hy. 3B, Contr. 56-207, Windsor. CD 1/29.

Hamilton Bridge Div., Bridge & Tank Co. of Canada Ltd., 231 Bay St. N., Hamilton, Ont., CA $508,370, superstructure of N. Y. C. swing bridge at Upper Beauharnois Lock, Soulanges Section near Beauharnois, QUEBEC. St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids Jan. 22, awarded Jan. 28. CD 12/28.

▲ **C. A. Pitts General Contractor, Ltee.**, 30 Commercial Rd., Leaside, Ont., LB $4,200,270 (5 bidders) excavation in Cornwall Island South Channel in International Rapids Sect. of the Seaway, ONTARIO. St Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids Jan. 22. CD 12/17.

Bruce County Council, Dr. J. F. Morton, Southampton, Ont. Own Forces. $470,000. road and bridge constr., maintenance, SOUTHAMPTON, ONT. E. G. Yundt, County Bldgs., Walkerton, Ont., engr.

BUILDINGS—LB & CA

▲ **Central Mortgage & Housing Corp**, 40 Eglinton Ave. E., Toronto, Ont. cancelled bids to have been opened Feb. 12 (1) constr. 160 single family DWELLINGS, (2) constr. services and sewage pumping station at Army Camp, CAMP BORDEN, ONT. CD 1/30.

▲ **Anglin-Norcross Ontario Ltd.**, 224 Davenport Rd., Toronto, Ont., CA Total est. $3,200,000 (8 bidders) HOSPITAL EXTENS. (1) north and south extens. to west wing (2) exten. to out-patients dept. (3) laundry and internes residence (4) laundry and internes residence (alternative design) TORONTO, ONT. Toronto East General & Orthopedic Hospital, Coxwell and Sammon Aves., Toronto, Ont. Bids Dec. 12, awarded Jan. 25. CD 11/8.

▲ **Isack Constr. Co., Ltd.**, 3310 Riverside Dr., Windsor, Ont. Owner Builds. $4,500,000. 42 brick veneer HOUSES, concrete block fdn., Jerome, Alancrest, Smeeton Sts., and Riverside Dr., WINDSOR, ONT.

Gregoire Perrault, 198 St. Joseph St., Joliette, Que. LB $397,900 (3 bidders) SCHOOL, 36 St. Henri St., HULL, QUE. La Commission Scolaire Catholique de Hull, 99 Hotel de Ville St., Hull, Que. Rene Richard, 85 Prud'homme St., Hull, Que., archt. CD 9/28/55.

U. S. POSSESSIONS

HEAVY CONSTRUCTION—BA

▲† **Guam, Marianas Islands**—HEADQUARTERS BLDG. BA 3/20—Bureau Yards & Docks, c/o Res. Officer Charge of Constr., 333 Fell St., San Francisco, Calif., U. S. A., constr. headquarters bldg., repair and maintenance hangar; roads and utilities, parking apron and taxiways, at Naval Air Station, Agana, Guam, officers' mess and POL facilities at Anderson Air Force Base, Guam, NBy 3330. $12,000,000. Plans deposit $70. Lump sum contract for above projects.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Calif., Crescent City**—City, City Hall, replacement of lines and equipment and constr. elevated water storage tank for 250,000 gal. $1,000,000. Project begins 1958.

▲ **Calif., Mountain View**—City, City Hall, water and sewerage sys. expansion, 4-year period. $1,000,000.

▲ **Calif., San Francisco**—City and San Francisco Co., P. Utility Comn., City Hall, 4 generators and water tunnel units, Hetch Hetchy Proj. $10,000,000. Bids in February. CD 11/11/55.

▲ **Tex., Texarkana**—City, City Hall, Lake pump station, water supply line and water treatment plant. $2,000,000. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs.

SEWERS, WASTE DISPOSAL

▲ **Colo., Denver**—City and Denver Co., City & County Bldg., Denver (City Council defeated this proposal by unanimous vote on account of its cost) formation of storm sewer distr. in south and southeast. $7,800,000. Dewey Wright, city engr. CD 1/10.

▲ **Minn., Golden Valley (P.O. Minneapolis)**—Village, R. W. Owens, clk., lateral sanitary sewer proj. $2,000,000. G. M. Orr Eng. Co., 1004 Marquette Ave., Minneapolis, consult. engr. To go ahead late 1957 or early 1958.

▲ **Wash., Tacoma**—City, City Hall, storm drainage system in West End. $1,000,000. Work to start this year.

BRIDGES

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,
Dakota Co.—constr. bridge over Mississippi River between South St. Paul and Newport on T. H. 100 South St. Paul. $3,000,000. A. E. LaBonte, bridge engr. Bids in spring. CD 7/20/56.

▲ **RHODE ISLAND**—State R. I. & Prov. Plants, Div. Purchase, State House, Providence,
Pawtucket—Pawtucket Bridge approach $3,500,000. Construction in 1957. Charles A. Maguire & Assoc., Turks Head Bldg., Providence, consult. engrs.
R. I., Woonsocket—State R. I. & Prov. Plants, Div. Purchase, State House, Providence, Hamlet Ave., Bridge, continuous deck girder bridge, main span 190 ft. over Blackstone River & 2 flanking spans 80 ft. each 66 ft. wide. $900,000. Constr. 1957.

▲ **WASHINGTON**—State Hy. Comn., Olympia,
King Co.—bridge 2-level, over Lake Union as part of Seattle-Tacoma Expressway $17,000,000. Work to start next year on piers, est. $2,500,000. CD 12/13/56, under Streets and Roads.
Thurston Co.—grade separation structure at Grand Mound Junction on State Hy. No. 1, $543,000.
Whitman Co.—Great Northern Ry. overcrossing and reconstr. 0.2 mi. State Hy. 3-F, at Palouse, $76,000. Great Northern Ry. overcrossing 0.1 mi. State Hy. 3, Steptoe to Cashup, $85,700.
Yakima Co.—bridge at Nelson on State Hy. 5 (Chinook Pass), $396,300. Bids this year or next. W. A. Bugge, state hy. dir.

STREETS AND ROADS

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford,
Harwinton, Litchfield, Thomaston, Torrington, Waterbury and Winchester—relocation of Rte 8 from Waterbury northerly to point 1.2 mile No. of Torrington-Winchester town line. $10,000,000. Andrews, Clark & Buckley, 305 E. 63 St., New York, N. Y., consult. engrs.
Winchester—relocation of Rte. 8 from point 1.2 mi. north of Torrington-Winchester town lines North 1.1 mi. to point 6 mi. south of int. of Rte 44. $200,000. John J. Mozzochi, 265 Hebron Ave., Glastonbury, consult. engr. CD 7/6.

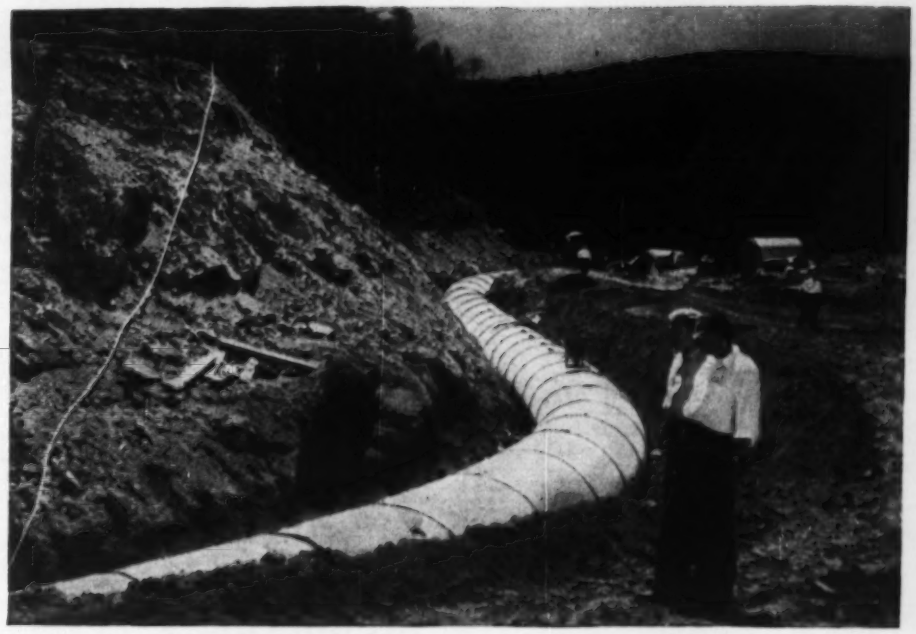
▲ **RHODE ISLAND**—State R. I. & Prov. Plants, Div. Purchase, State House, Providence,
East Providence—East Providence Expressway $6,500,000. Construction 1957/58. Charles A. Maguire & Assoc., Turks Head Bldg., Providence, consult. engrs.
North Smithfield—Louisquisset Pike Extension to Massachusetts Line, $5,000,000. Constr. 1957/58, C. W. Riva Co., 511 Westminister St., Providence, consult engr., CD 4/19/54.
Providence—Louisquisset Pike Exten., Branch Ave. to Admiral St. $550,000, Constr. 1957. C. W. Riva Co., 511 Westminister St., Providence, consult. engrs. CD 4/19/54.
Warwick—Nooseneck Hill Relocation to New Junction with Route 2, $6,000,000. C. W. Riva Co., 511 Westminister St., Providence, consult. engr.

† **VERMONT**—U. S. Eng., 160 Causeway St., Boston, Mass.,
relocation of highways 4.2 mi. Townshend and Jamaica CIV ENG 19-016-57-65. $900,000-$1,000,000. Bids About Mar. 7.

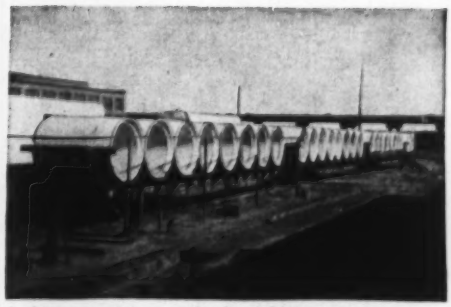
▲ **WASHINGTON**—State Hy. Comn., Olympia,
Adams Co.—grading, surf. bridges on 12.8 mi. State Hy. 7-C, Koren to junction with primary state Hy. 11, $1,176,500;
grading, surf. 6 mi. State Hy. 7-C from junction with Secondary State Hy. 11-G to Koren, $297,700.
grading, surf., paving, bridges 11.2 mi. State Hy. 11 Franklin County line to Primary State Hy. 11 $1,440,300.
widening U. S. Hy. 10 past Ritzville from junction with Primary State Hy. 18 to junction with Primary State Hy. 2, $4,371,000.
Benton Co.—grading, surf., paving 2.19 mi. State Hy. 8 from junction with Primary State Hy. 8 to Kennewick Ave. $209,500.
grading, surf., paving 5 mi. State Hy. 3, Prosser to Kiona, $450,000.
grading, surf. 2.75 mi. State Hy. 8, Prosser south, $323,400.
Clark Co.—extending Vancouver freeway from Burnt Bridge Creek to Salmon Creek School on State Hy. 1, $2,584,177. CD 8/1/51.
resurf. 5 mi. State Hy. 1, Kozy Kamp to Woodland. $155,000.
grading, paving and bridge 1.77 mi. State Hy. 8 in Vancouver, Blanford Dr. to Sieret Ave. $375,000.
grading, surf. paving 0.69 mi. State Hy. 8 Alpine Rd. to Park St. in Camas, $375,000.
grading, surf., paving 1.63 mi. State Hy. 1-T, Vancouver Lake north, $253,000. CD 8/1/51.
Cowlitz Co.—interchange structures and frontage roads for State Hy. 1, Kelso to Lewis County Line, $550,000. CD 1/11/55.
resurf. 1.34 mi. State Hy. 1, River Bridge vicinity, $88,000.

(Continued on page 88)

S-curve section of 72-in. concrete pipe in place.



DENVER'S MOUNTING WATER NEEDS SUPPLIED WITH 27,000 FEET OF *CONCRETE PIPE*



A shipment of four carloads of 72-in. pipe.

The Denver, Colo. Water Board has made available an extra 19,400 acre-feet of water per year for the city's growing needs with its St. Louis Creek Collection System.

The project, 80 miles west of Denver, required 27,000 ft. of concrete pipe 30 to 72 in. in diameter. Inasmuch as there was no head on these lines, reinforced concrete sewer pipe, ASTM Specification C-75, was used.

Like Denver, many other cities are using concrete pipe to supply their ever-mounting water needs. That's because concrete pipe water lines provide maximum capacity plus great strength and extra long life. No tuberculation or incrustation difficulties lower their hydraulic efficiency. The final result is true *low-annual-cost* water line service.

PORTLAND CEMENT ASSOCIATION
33 West Grand Avenue, Chicago 10, Illinois
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

Three truckloads of 72-in. pipe enroute to job.

Contractor's pipe storage yard at the job site

(Continued from page 86)

grading, surf. paving, bridge 1 mi. State Hy. 1-S, Johnson Creek to Hatchery Creek, $365,000. CD 1/11/55.
Franklin Co.—grading, surf., bridges 2.1 mi. State Hy. 11-G, Mesa vicinity $511,323.
grading, surf. 5.5 mi. State Hy. 11-A, from junction with Secondary State Hy. 11-G to Connell, $103,000.
grading, surf. 3.9 mi. State Hy. 11-A AEC boundary easterly, $230,400.
grading, surf. 4.6 mi. State Hy. 11, Connell to Adams County line, $423,100.
Grant Co.—widening State Hy. 2, from Burke Junction to Adams County Line, $3,795,000.
King Co.—constr. section of Tacoma-Seattle expressway from junction with Echo Lake branch of State Hy. 2 to Dumamish River $6,134,000. CD 12/13.
grading, surf. paving, bridges on State Hy. 2-A Factoria to 8 St. in Bellevue, $1,379,000.
widening State Hy. 2-A north of Bellevue, $320,000.
Kittitas Co.—widening, paving, storm sewer on 0.36 mi. State Hy. 2 (8 St.) in Ellensburg, Delphine to Main Sts., $85,000. CD 11/15/55.
grading, surf., paving 3.77 mi. State Hy. 2, Teanaway River to Teanaway, $320,500. CD 11/15/55.
widening State Hy. 2, from Hyak to point east of Easton, $5,178,000. CD 11/15/55.
widening U. S. Hy. No. 10, Ellensburg to Vantage $140,000.
Kittitas and Yakima Counties—grading, surf. paving 10 mi. State Hy. 2, Ellensburg to Yakima $1,000,000. CD 11/15/55.
Klickitat Co.—grading, surf., bridges 14.3 mi. State Hy. 8, Rock Creek to Roosevelt, $1,940,000.
grading, surf., paving 2.3 mi. State Hy. 8, Satus Pass North, $654,000.
Lincoln Co.—surf., paving 11.96 mi. State Hy. 2 Davenport to Reardam, $841,000.
grading, bridge 6 mi. State Hy. 2, Davenport to Gravelle Rd., $504,900.
Pend Oreille Co.—paving, surf. 4 mi. State Hy. 6 Penrith to Newport, $277,300.
Pierce Co.—Woodbrook Road to Union Ave. section of Tacoma-Seattle Expressway, $1,239,000, CD 12/13.
constr. section of Tacoma-Seattle Expressway from Union Ave. exten. to S. 72 St. in Tacoma, $528,000. CD 12/13.
constr. section of Tacoma-Seattle Expressway in Tacoma from S. 72 St. to M St., $4,029,000, CD 12/13.
widening State Hy. 1 between North Fort Lewis and Woodbrook Rd., $928,000.
Skagit Co.—widening State Hy. 1 between Pilchuck Hill and Conway Junction, $617,000.
Snohomish Co.—widening State Hy. 1 in Everett, $500,000.
Spokane Co.—surf., paving 5.2 mi. State Hy. 6, Dean to Chattaroy, $346,700.
grading, paving 4 mi. State Hy. 3, Washington Rd. to Hatch Rd., $929,300.
resurf. 1.4 mi. State Hy. 2 in Spokane (Sprague Ave.) Altamont to Havanna Sts., $79,100.
paving, channelization 0.8 mi. State Hy. 2 from junction with Primary State Hy. 11 to Spokane, $132,200.
widening 1.7 mi. State Hy. 2-H, Dollar Rd. to Argonne Rd., $204,300.
grading, surf. paving 0.66 mi. State Hy. 3-H Mt. Hope Rd. to Rock Creek, $118,700.
paving, shoulder oiling 0.35 mi. State Hy. 3-H Rockford to Freeman, $157,200.
Stevens Co.—grading, surf. 2.32 mi. State Hy. 6-A Park Rapids to Olsen Creek, $159,300.
grading 6.57 mi. State Hy. 3, Loon Lake to Grouse Creek, $450,000.
Thurston Co.—surf., paving Olympia Freeway as part of State Hy. No. 1, $1,680,000.
Whatcom Co.—constr. freeway thru Bellingham as part of State Hy. 1, $4,705,000.
Whitman Co.—grading, surf., bridge 4.5 mi. State Hy. 18, Ewan to Cottonwood Creek, $365,600.
Yakima Co.—grading, surf. paving 1.89 mi. State Hy. 11-A, Lenox Ave. to Birchfield Rd., $263,800.
grading, surf., paving 6 mi. State Hy. 3-A, Mabton to Byron, $543,900.
grading, surf., paving, bridges 2.85 mi. State Hy. 3, Zillah bypass, $361,600.
grading, surf. paving 3.44 mi. State Hy. 5 (Chinook Pass) Jacobson to Fruitvale Blvd., $511,300.
grading, surf. paving 6.2 mi. State Hy. 23-A Parker to Wapato, $812,000.
resurf. 5.35 mi. State Hy. 8 from third crossing of Satus Creek to Toppenish Creek, $145,100. W. A. Bugge, state hy. dir. Work to start this year or next.

EARTHWORK, WATERWAYS

▲† **Connecticut**—U. S. Eng., 160 Causeway St., Boston, Mass.,
rolled fill earth and rock dam, 136 ft. high, side channel spillway 290 ft. long, 910-acres, Thomaston Flood Control Reservoir, Housatonic River. $4,573,000 (no appropriation). Barnes Engineering Co., 815 Washington St., Newtonville, Mass., dam site surveys. Anderson-Nichols & Co., 150 Causeway St., Boston, Mass. design of spillway and outlet works; Congdon, Gurney & Towle, Inc., 53 State St., Boston, Mass., consult. engrs.
relocation of state and town roads caused by Thomaston Dam constr., 6 mi. State Hy. 8, etc., Harwinton, Litchfield, Plymouth and Thomaston, $2,483,000 (no appropriation), Fenton G. Keyes Assocs., 202 Washington St., Providence, R. I., consult., engrs.
relocation of 5.4 mi. Naugatuck Div., New York, New Haven & Hartford R.R., Harwinton, Litchfield, Plymouth and Thomaston. $5,600,000 (no appropriation), DeLeuw, Cather & Brill, 345 Boylston St., Brookline, Mass., consult. engrs. John W. Leslie, ch. engr. div. CD 3/22.

AIRPORTS

▲† **Mont., Great Falls**—BUILDINGS—U.S. Eng., City-County Bldg., Walla Walla, Wash., imprvt. proj., two new bldgs., resurf. runways and extending ramps at Gore Field. $1,700,000. Bids in April. CD 1/4/54.
B. C., Prince George—AIRPORT TERMINAL, etc.—Dpt. Transport, Hunter Bldg., Ottawa, Ont., airport terminal and imprvs. $900,000.
B. C., Williams Lake—AIRPORT IMPRVS.—Dpt. Transport, Hunter Bldg., Ottawa, Ont., airport imprvs. and terminal. $900,000.
▲ **Newfoundland, Gander** — TERMINAL BLDG. — Dpt. Transport, Hunter Bldg., Ottawa, Ont., terminal bldg. and imprvs., Gander Airport. $1,845,000.
▲ **N. W. T., Aklavik**—AIRPORT EXPANSION—Dpt. Transport, Hunter Bldg., Ottawa, Ont., airport expansion, terminal and imprvs. $2,500,000.
▲ **N. W. T., Yellowknife**—AIRPORT EXPANSION—Dpt. Transport, Hunter Bldg., Ottawa, Ont., airport expansion, terminal and imprvs. $1,200,000.

LATIN AMERICA

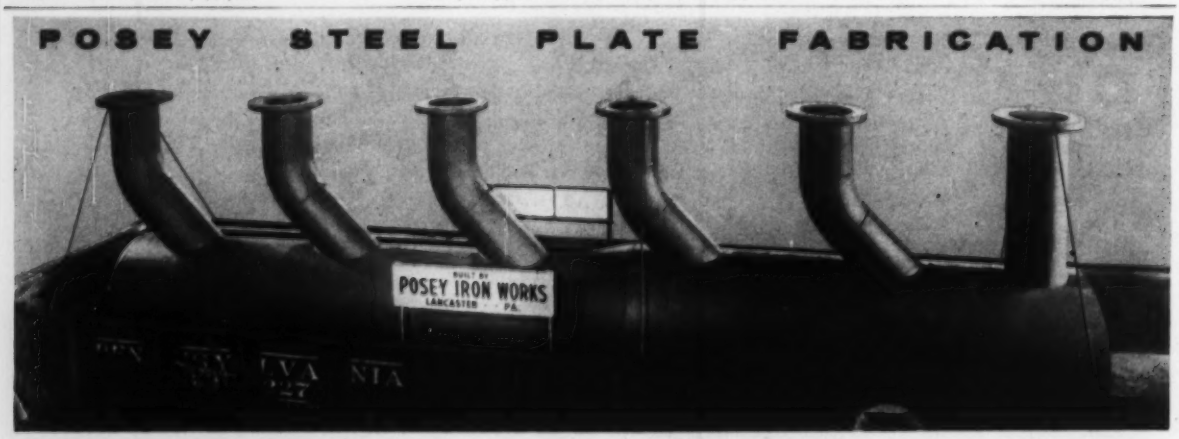
▲ **Argentine**—POWER PROJECTS—Govt. of Argentine, Buenos Aires,
Water and Power Board Projects for Immediate Execution
A. Hydroelectric power plants.
1. Rio Tercero Dam No. 3 (Cordoba) $3,333,000.
2. Rio Tercero hydroelectric plant No. 3 (Cordoba) $5,556,000
3. El Nihuil hydroelectric plant No. 3 (Mendoza) $13,889,000.
4. Pueblo Viejo hydroelectric plant (Tucuman) $5,556,000.
5. Hilarion Furque hydroelectric plant (Rio Negro) $1,111,000.
6. Ullum hydroelectric plant (San Juan) $7,778,000.
7. Agua del Toro hydroelectric plant (Mendoza) $21,111,000.
8. Huelches hydroelectric plant (Rio Negro y La Pampa) $11,111,000.
9. Cabra Corral hydroelectric plant (Salta) $8,333,000.
10. Rio Hondo hydroelectric plant (Santiago del Estero) $2,222,000. CD 10/8/47.

B. Thermoelectric power plants:
1. Mar del Plata (Buenos Aires) $5,000,000.
2. Barranqueras (Chaco), $5,556,000.
3. Concepcion del Uruguay (Entre Rios) $3,333,000.
4. Alto Valle (Rio Negro) $5,556,000.
5. Rio Gallegos (Santa Cruz) $2,222,000.
6. Tucuman (Tucuman) $5,556,000.
7. Rosario (expansion) $5,556,000.
8. Calchines (Santa Fe) $5,556,000.
9. acquisition of generators, $30,000,000, CD 11/26/56.

C. Transmission lines
1. Mendoza-San Juan (Mendoz y San Juan) $2,778,000.
2. El Nihuil-Mendoza (Mendoza) $11,111,000.

D. Regulatory projects
1. Embalse Huelches (Rio Negro y La Pampa) $16,667,000.
2. Embalso Agua del Toro (Mendoza) $8,333,000.
3. Embalse Paso de las Carretas (San Luis) $2,222,000.
4. Embalse Cabra Corral (Salta) $16,667,000.

POSEY STEEL PLATE FABRICATION



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60" x 48" I.D. MANIFOLD ASSEMBLY for Water Intake Line . . . for use in a U. S. Atomic Energy Plant. For almost half a century, Posey Iron Works has been meeting the most exacting specifications in steel plate fabrication. Let Posey quote on your next job. Write, wire or phone . . . you can depend on Posey to meet rigid delivery and budget requirements.

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E. Irrigation projects
1. Canal Pato de las Carretas-Villa Mercedes (San Luis) $4,444,000.
2. Valle de Viedma (Rio Negro) $2,778,000.
3. Colonia Sarmiento (Chubut) $2,778,000.
4. Rio Chubut (Chubut) $2,778,000, CD 10/8/47.

PUBLIC BUILDINGS

▲ **Calif., Orinda**—SCHOOL—Orinda Union Elementary School Dist., c/o Supt., Orinda, voted bonds Jan. 22, school expansion program. $2,150,000.

▲ **Calif., Palmdale**—SCHOOLS—Palmdale School Dist., Palmdale, 2 elementary schools, $1,896,351. Constr. in 1957.

▲† **Calif., Palo Alto** — HOSPITAL — Veterans Admin. Munitions Bldg., Wash., D. C., plans by Welton Becket, 5657 Wilshire Blvd., Los Angeles. Veterans Administration Hospital, 90-acre site. $20,000,000. Robinson & Giddings, 80 Stonestown St., San Francisco, consult. engrs. CD 12/23/55.

▲ **Calif., Ventura** — SCHOOLS — Ventura Elementary School Dist., Ventura, $2,800,000 bond election Mar. 20, three new schools and addnl. classrooms for existing schools. CD 5/31/55.

Colo., Golden—GYMNASIUM—Colorado School of Mines, Golden, plans by Fuller, Fuller & Fuller, archts.-consult. engrs., Insurance Bldg., Denver, gymnasium $750,000.

▲ **Conn., Hartford**—SCHOOLS—Town, Town Hall, Northeast Elementary School, $1,640,000; elementary school to replace Washington St. School, $1,300,000.

▲ **Conn., Lebanon**—HIGH SCHOOL—Town, plans by Arnold Lawrence, 571 Porter St., Manchester, Junior-Senior High School, auditorium, gymnasium, vocational-agricultural unit. $1,000,000.

▲ **Conn., New Haven**—CLASSROOM—State P. Wks. Dpt., 165 Capitol Ave., Hartford, general classroom bldg. New Haven State Teachers' College. $1,096,000. CD 3/14.

▲† **Md., Gaithersburg**—FACILITIES TO HOUSE NATIONAL BUREAU OF STANDARDS—General Services Admin., Pub. Bldgs. Service, General Services Bldg., 19 and F Sts. N.W., Wash. 25, D.C., plans by Voorhees, Walker & Smith, archts.-engrs., 101 Park Ave., New York, N. Y., facilities to house National Bureau of Standards.

▲ **Md., Glen Burnie**—HOSPITAL—Anne Arundel Co., Court House, plans by Wheeler & Bonn, Crain Hy., Glen Burnie, general hospital. $2,600,000. James R. Mays Assoc., 1700 Walnut St., Phila., Pa., hospital consultants.

▲ **Md., Rockville** — SCHOOL — Montgomery Co. School Comrs., plans by Elam & Darby, 2011 K St. N.W., Wash., D. C., 1 and 2 story masonry Newport Junior High School, Kensington. $1,600,000. Karsunky, Weller & Gooch, 2011 K St. N. W., Wash., D. C., and Beall & LaMay, 1726 M St. N. W., Wash., D. C., engrs. CD 10/1.

▲ **Mass., Boston**—AUDITORIUM—City, City Hall, auditorium in Back Bay area adjacent to Prudential Center. $7,500,000.

Mass., Methuen—OFFICE—Town, Bd. Selectmen, Town Hall, plans by Campbell & Aldrich, 38 Newbury St., Boston, town office. $500,000.

Mass., Newton—SCHOOL—City, 40 Elm Rd., plans by Rich & Tucker Assoc., 45 Newbury St., Boston, Mason-Rice Elementary school. $600,000. CD 11/10/54.

† **Mass., Quincy**—TRAINING CENTER—First Naval Dist., 495 Summer St., Boston, plans by Kelly & Gruzen, 80 Fifth Ave., New York, N. Y., and Bourne, Connor, Nichols & Whitney, assoc. archts., 177 State St., Boston, 35,000 sq. ft. U. S. Naval and U. S. Marine Training Center, Sea St. $500,000. CD 6/8/54.

▲ **Mich., Bloomfield Hills** — SCHOOLS — Bd. Educ., Bloomfield Hills School Dist., 4200 Andover Rd., Junior High School, Quarton and Wing Lake Rd., $1,250,000; elementary school, Quarton and Bayley Rd., $700,000. CD 9/18.

▲ **Mich., Dearborn**—COLLEGE BLDGS.—University of Michigan, Ann Arbor, plans by Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, college bldgs., Ford Center at new campus for University of Michigan. $6,500,000.

Minn., Foley—SCHOOL—Bd. Educ., H. J. Chmielewski, clk., plans by Pinault-Siddens & Co., St. Cloud, high school. $500,000.

Minn., Long Prairie—SCHOOL—Bd. Educ., C. J. Differt, clk., voted $600,000 bonds Jan. 24, high school addn. $500,000. Thorshov & Cerny, 400 Metropolitan Bldg., Minneapolis, archts. Bids in 1957. CD 1/15.

Mo., Kirksville—PHYSICAL EDUCATIONAL—Northeast Missouri State College, Walter H. Ryle, pres., Kirksville, plans by Pearce & Pearce, 308 N. Sixth St., St. Louis, Zone 1, physical educational bldg. (field house), incl. separate gymnasiums for men and women. $750,000. Bids about Apr. 1. CD 2/1.

Mo., St. Louis County—SCHOOL—Bayless School Dist., Bd. Educ., Hugo E. Beck, supt. schools, Weber Rd. and Hildesheim Ave., St. Louis County, Zone 23, voted $650,000 bonds Jan. 22, high school, on Weber Rd. adjacent to Hildesheim Ave.

Mont., Billings—APARTMENT—Eastern Montana College of Education, Billings, plans by Leners & Stroebe, 418 N. 25 St., 3-unit apartment. $670,000.

▲ **N. J., Toms River**—SCHOOL—Toms River Bd. Educ., constr. high school. $1,000,000.

▲ **N. Y., New York**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, E-194, Senior High School to replace Yorkville Vocational High School. $7,000,000. To go ahead after 1962. CD 11/26/54.

▲ **Pa., Green Ridge**—SCHOOL—Penn-Delco Joint School Bd., Green Ridge, plans by Gardner & White Assocs., 10 S. 18 St., Phila., Junior-Senior High School.

Information for Contractors Bidding on Contracts

NORTHERN ILLINOIS TOLL HIGHWAY

Tentative Schedule for Advertising for Bids

February

Contract No.	Roadway Lanes	Location	Mileage
T-9A	Six	Tri-State Route	2.2
T-11B	Four	Tri-State Route	4.3
E-1C	Four	East-West Route	5.2
N-4D	Four	North Illinois Route	5.2
N-7B	Four	North Illinois Route	3.5
T-2C	Four	Tri-State Route	3.2
T-3B	Four	Tri-State Route	1.3

March

T-1B*		Tri-State Route	0.3
T-2A	Four	Tri-State Route	2.0
T-4A*		Tri-State Route	0.9
T-5A	Six	Tri-State Route	5.4
T-13B	Four	Tri-State Route	4.8
E-1A	Four	East-West Route	4.0
T-3A	Four	Tri-State Route	3.9
N-8A	Six	North Illinois Route	2.5

April

T-1A	Four	Tri-State Route	3.2
T-1C	Four	Tri-State Route	5.4
T-2B	Four	Tri-State Route	3.2
T-6C	Six	Tri-State Route	5.8
T-6B	Six	Tri-State Route	2.0
T-9B	Four	Tri-State Route	2.1
E-1B*		East-West Route	0.3
N-8B	Six	North Illinois Route	6.0
N-9A*		North Illinois Route	0.2

May

T-6A	Four	East-West Route	3.2

* Denotes special structure contract. The remaining contracts consist of the grading, drainage, paving and constructing of appurtenances.

Roadway Sections Previously Advertised

Section	Mileage	Location	Date Bids Opene
N-1C	3.07	North Illinois Route	January 17, 1957
N-3A	4.03	North Illinois Route	January 17
N-4C	6.40	North Illinois Route	January 24
E-1D	5.67	East-West Route	January 24
T-11A	3.07	Tri-State Route	January 24
T-12A	5.05	Tri-State Route	January 31
T-12B	3.46	Tri-State Route	January 31
T-12C	3.68	Tri-State Route	January 31
N-6A	4.64	North Illinois Route	January 31
T-7A	4.75	Tri-State Route	February 7
T-8A*	0.59	Tri-State Route	February 7
N-3B	6.12	North Illinois Route	February 14
E-2A	7.93	East-West Route	February 14
T-13A	4.85	Tri-State Route	February 21

Contracts have been awarded for Sections N-2A, N-4A, N-1A&B, N-3C, N-4B, N-5A*, T10A, N-7A, N-2B, and N-6B&C.

Copies of plans, specifications, proposal forms, and other contract documents for each contract will be available for public inspection or purchase at the office of the Chief Engineer of the Commission.

For Additional Information: Write, Wire or Telephone

THE ILLINOIS STATE TOLL HIGHWAY COMMISSION

20 North Wacker Drive—Chicago 6, Illinois—FRanklin 2-7020

$2,267,259. Kuljian Corp., 1200 N. Broad St., Phila., consult. engr.

▲ **Pa., Harrisburg**—EXHIBIT—General State Auth., 18 and Herr Sts., plans by Joseph F. Bontempo & Assocs., 115 Shields St., Rochester, exhibit bldg. addn. and new roof for large arena bldg., $1,500,000. CD 1/18/56; revamping boiler plant, electrical sys. and installing new water main at State Farm Show Bldg., $400,000. William K. Hood & Assocs., Inc., York, engr. CD 3/1.

Pa., Phila.—POLICE STATION—City, Dpt. Procurement, City Hall Annex, plans by John Lane Evans, 12 S. 12 St., police station, 17 St. and Montgomery Ave. $574,000. CD 4/15/46.

▲ **R. I., Cumberland**—SCHOOL—Towns Cumberland, Lincoln & Smithfield Citizens' Comn., Town Hall, Regional High School. $1,800,000.

▲ **Tenn., Chattanooga**—SCHOOLS—Hamilton Co. Bd. Educ., Court House, const. Junior-Senior High School at East Ridge, $540,000; plans by Frank Gibson, Chattanooga Bank Bldg., Tyner Junior High School, $570,000. CD 11/25/53.

▲ **Tex., Harlingen**—SCHOOL—Harlingen Independent School Dist., Harlingen, voted bonds Jan. 12, high school, $1,320,000. Smyth & Smyth, 1806 S. Alameda St., Corpus Christi, archts. CD 12/31.

▲ **Va., Warrenton**—WAREHOUSE, LIBRARY—U. S. Eng., 1st and Douglas Sts. N. W., Wash. 25 D. C., warehouse, under $100,000; plans by Kuljian Corp., 1200 N. Broad St., Phila., Pa., constr. library, Research and Professional, $500,000-$1,000,000, Vint Hill Farms Station.

Wis., Grafton—HIGH SCHOOL—Jefferson Joint School Dist. No. 1, Grafton, plans by Darby, Bogner & Assocs., 759 N. Milwaukee St., Milwaukee, Zone 2, 62,000 sq. ft. high school. $700,000. CD 6/6.

Ont., Belleville—FEDERAL—Dpt. P. Wks., Hunter Bldg., Ottawa, federal bldg. $500,000.

Ont., Sudbury—FEDERAL—Dpt. P. Wks., Hunter Bldg., Hunter Bldg., Ottawa, 10 story Postal Station Q addn., Yonge and St. Clair East. $4,000,000.

▲ **Ont., Toronto**—POSTAL STATION—Dpt. P. Wks., Ottawa, federal bldg. $750,000.

COMMERCIAL BUILDINGS

Ala., Tuskegee—CHAPEL—Tuskegee Institute, Tuskegee, rebuild college chapel. $500,000.

Calif., Lakewood—HOSPITAL—Eugene De Kove, c/o Harold E. Ketchum, consult. engr., 3711 Cedar Ave., Long Beach. 70-bed, 28,000 sq. ft. frame stucco hospital, Clark and Candlewood Sts. $616,000.

Calif., West Covina—DWELLINGS—C & M Homes, 705 W. Foothill Blvd., Azusa, plans by S. Jack Henderson, 705 W. Foothill Blvd., Azusa, 47 frame, stucco, wood siding, and brick veneer dwellings, in Tr. 20977. $500,000.

▲ **Calif., West Covina**—DWELLINGS—Gregory Sequoia Developers, 8440 Melrose Pl., Los Angeles, plans by L. C. Major & Assoc., 11011 S. Paramount Blvd., Downey, 100 frame, stucco, and wood siding dwellings, Tracts 15860 and 19565. $1,000,000.

▲ **Colo., Lakewood**—HOTEL, etc.—Owner, c/o Cline & Hardesty, 7475 W. Colfax Ave., Denver, Lakewood and United Constr. Co., Mile High Center, Denver, plans by Toll & Milan, 648 Sherman St., Denver, 12 story hotel, swimming pool. $4,000,000.

▲ **Colo., Westminster**—SHOPPING CENTER—Dunton Realty Co., Midland Savings Bldg., Denver, shopping center, 250,000 sq.ft. $4,500,000. Jared B. Morse, 104 Sherman Pl., Denver, Colo. consult. engr. CD 4/24/53.

▲ **Conn., Bloomfield and Windsor**—HOUSES—Hillsboro Corp., c/o David Kotkin, 50 State St., Hartford, 140 houses, Addison St. $1,400,000.

▲ **Conn., Hamden**—HOUSES—Julius Meshberg, Westwood Rd., 169 houses, Westwood Rd. $1,690,000.

▲ **Conn., Milford**—SHOPPING CENTER—Sol G. Atlas, Cross County Center, Yonkers, N. Y., plans by Lathrop Douglass, 518 Fifth Ave., New York, N. Y., shopping center incl. 60 stores, Boston Post Rd., and 5,200 vehicle parki g area. $20,000,000. CD 7/31.

Conn., West Hartford—SHOPPING CENTER—Morton Realty Co., 326 N. Main St., plans by Irving W. Rutherford, 49 Garden St., Hartford, 2 story, 60,000 sq. ft. shopping center, parking area, N. Main St., Bishop's Corner. $660,000. CD 12/31.

▲ **Fla., Bala Cynwyd**—APARTMENT—Norman D. Denny, Roosevelt Blvd. and Comly Rd., Phila., plans by Samuel I. Oshiver, 1913 Walnut St., Phila., apartment, 175 units, Belmont and Llanberris Aves. $3,250,000.

▲ **Fla., Miami**—SHOPPING CENTER—Mackle Co., Inc., 2820 Coral Way, plans by James Vensel, 2820 Coral Way, shopping center, north side of Bird Rd. between S.W. 112 and 114 Aves. $2,000,000. Gamble Pownall & Gilroy, 1407 E. Las Olas Blvd., Fort Lauderdale, assoc. archts.

Fla., Miami—HOSPITAL—Mercy Hospital, Archbishop Joseph T. Hurley, Diocese of St. Augustine, 200 bed east wing Mercy Hospital addn., 3663 S. Miami Ave. $600,000.

Fla., Tampa—MEDICAL CENTER—Medical Center, Inc., c/o Mark Hampton, archt., Stovall Professional Bldg., 7 story, bsmnt. reln.-con. medical center bldg., 2 elevators, air-conditioning, Davis Blvd. and Columbia Dr., Davis Island. $750,000.

▲ **Ga., Augusta**—HOUSING—U. S. Army, Ft. Gordon, Augusta, 480 unit Capehart housing. $7,000,000. Constr. probably starts in October.

▲ **Ga., Fort Mc Pherson**—HOUSING—U. S. Eng., Lee St. S.W., Atlanta, construct and finance 16 permanent Capehart type family duplexes and 10 apartment bldgs. all to replace existing sub-standard housing. $1,500,000.

▲ **Ill., Chicago**—OFFICE—Bodine Electric Co., 2254 W. Ohio St., plans by Skadberg & Oldon Co., 2532 N. Milwaukee Ave., 2 story, brick, stone office bldg., 2600 W. Bradley Pl., $1,000,000.

▲ **Ill., Chicago**—APARTMENT—University of Chicago, 5801 E. Ellis Ave., plans by Burnham & Hammond, 53 W. Jackson Blvd., 8 story, brick, stone apartment. 79 units, 57th and Drexel Ave. $1,100,000. CD 11/14.

Ind., Griffith—SHOPPING CENTER—Landau & Perlman, 110 S. Dearborn St., Chicago, plans by Sidney C. Finck, 343 S. Dearborn St., Chicago, shopping center, Ridge Rd. and Broad St. $750,000.

Kan., Leavenworth—POST OFFICE—General Services Admin., 2306 E. Bannister Rd., Kansas City, Mo., plans by Geo. Tewksbury & Assoc., 5437 Johnson Dr., Mission, post office and also housing several govt. agencies, lease-purchase program. $968,000. CD 5/16, under Public Buildings.

▲ **Md., Baltimore**—APARTMENT—O'Bryan, Inc., c/o Harry L. Kessler & Louis J. Teunis, 200 C. St. S.E., Wash., D. C., apartment, West Cold Spring Lane, $5,000,000.

▲ **Mass., Boston**—COMMERCIAL CENTER—Prudential Life Insurance Co. of America, 763 Broad St., Newark, N. J., plans by Cram & Ferguson, 248 Boylston St., Boston, commercial center. $114,000,000. Site purchased, Metcalf & Eddy, Statler Bldg., Boston, and Pereira & Luckman, 9220 Sunset Blvd., Los Angeles, Calif., engrs. CD 10/23.

▲ **Mass., Waltham**—DORMITORIES—Brandeis University, Dr. Abram L. Sacher, pres., 415 South St., plans by Harrison & Abramovitz, 650 Fifth Ave., New York, N. Y., 4 dormitories and student center, $1,000,000; 3 bldgs., incl. faculty center, humanities center and American Civilization bldg., $750,000; plans by Hugh Stubbins Assoc., 806 Mass. Ave., Cambridge, administration bldg., $350,000; plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, 2 story, masonry biological science bldg., Sect. II, $350,000.

▲ **Mass., West Springfield**—SHOPPING CENTER—Eastern State Shopping Centers, Inc., G. L. Mallwalk, Cross Country Circle, Yonkers, N. Y., shopping center, 57 stores, 200 sq. ft. $3,000,000. Constr. in 1957. CD 5/4, under Riverdale Shopping Center, Inc., as owner.

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EN-2

Mont., Great Falls—OFFICE—Great Falls Building & Loan Assn., 17 5 St. N., 2 story, 100x100 ft. office. $500,000. Bids within 60 days.

Neb., Omaha—SCHOOL—Brownell Hall, 54 and Underwood Sts., plans by Boyer, Bishop & Widstrom, 1502 Dodge St., school addn. $551,000.

▲ **N. J., Bound Brook**—STORES—Chandler Realty Co., Edward Chandler, pres., U. S. Hy. 22, Bound Brook, plans by George E. Johnson, RD 1, Rte. 69, Lebanon, 8 unit rein.-con. building, containing 300,000 sq. ft. store space, on Chimney Rock Rd., First Sect. of Central Jersey Industrial Park. $1,200,000. William H. Cunningham, 58 Mercer St., Somerville, consult. engr.

▲ **N. Y., Brooklyn**—ADPARTMENT, etc.—Earl W. Jimerson Housing Co., Inc., 32 Broadway, New York, Zone 4, plans by Samuel Paul & Seymour Jarmul, 89-51 164 St., Jamaica, Zone 3, 14 story apartment and garage, 1407 Linden Blvd. $3,000,000.

▲ **N. Y., Brooklyn**—APARTMENT—Lefrak Organiaztion, 97-27 64 Rd., Forest Hills, 16 apartment bldg. 1,500 units, Manhattan Beach and Sheepshead Bay Section, $12,000,000.

▲ **N. Y., New York**—APARTMENT—Beekman Tower House, 36 W. 44 St., Zone 19, plans by Richard Roth, 575 Madison Ave., Zone 22, 16 story apartment, 1058-64 Third Ave. $1,878,000.

N. Y., New York—HOME—Carmelite Sisters for the Aged & Infirm, 66 Van Cortlandt Dr. S., plans by Frederick H. Voss, 101 Park Ave., Zone 17, altering 6 story home at site, $900,000.

▲ **O., Middleburgh Heights**—HOMES—Beauty Built Homes, 14170 Shawnee Trail, Cleveland, Zone 30, 136 homes, near Pearl and Pleasant Valley Rds. $3,500,000. Bids in spring.

▲ **O., Warren**—HOMES—Walter D. Graham, realtor and assoc., Warren, 530 houses, Austin Village Dist. $6,000,000.

▲ **Ore., Portland**—HOTEL—Western Hotels, Inc., Olympic Hotel, Seattle 1, Wash., 12 to 15 story Benson Hotel addn. $3,000,000.

▲ **Pa., Bala Cynwyd**—APARTMENT—Owner, c/o Irman Kaakowitz, 1420 Walnut St., Phila., plans by Samuel I. Oshiver, 1913 Walnut St., Phila., apartment, 155 units Conshohocken State Rd. and Lianberris Ave. $2,500,000.

▲ **Pa., Phila.**—BANK—Cayuga Federal Savings & Loan Assoc., 13 and Sansom Sts., plans by Philip Mastrim, Penn Square Bldg., Juniper and Filbert Sts., 2 story, 16200 sq. ft. masonry branch bank. $5,000,000.

Tenn., Chattanooga — CLINIC — Tepper Clinic, 511 McCallie Ave., plans by Mario Bianculli, Volunteer Bldg., 3 story clinic addn., 2 story, 83-car garage in rear. $600,000.

▲ **Tex., Victoria**—HOUSING—Procurement Office, Foster Air Force Base, Victoria, plans by MacKie & Kamrath, 2713 Ferndale St., Houston, construct and finance, 500-units family housing. $5,750,000. Bernard Johnson & Assoc., 4926 Travis St., Houston, engrs. CD 3/12.

▲ **Va., Fort Belvoir**—HOUSING—U. S. Eng., 1st and Douglas Sts. N.W., Wash. 25, D. C., plans by E. Tucker Carlton, 206 E. Cary St., Richmond, construct and finance, 2nd unit, 576 units, Capehart housing. $5,000,000.

▲ **Wash., Bellevue**—CHURCH—Corp. of Catholic Archbishop of Seattle, 907 Terry St., Seattle, church on Clyde Hill. $1,000,000. Work may start this year.

Wyo., Lander—HOSPITAL—Bishop Randall Hospital, constr. hospital. $636,000.

▲ **N. B., Moncton**—CONVENT—Le Juvenat des Filles de Jesus, Rogersville, plans by Hel Laberge, 140 St. Jean St., Quebec City, Que., 5 story, 48,750 sq. ft., brick, stone, steel convent to be known as Mother House of the Order, 20-acre site, Irishtown Rd. area. $1,250,000.

▲ **Newfoundland, St. Johns**—HOSPITAL—St. John's General Hospital Bd., St. Johns, plans by Fleming & Smith, 1235 McGill College Ave., Montreal, Que., two wings to General Hospital (a) approx. 50x150 ft. cancer wing, (b) 50x135 ft. south wing, steel frame, brick walls, concrete slab constr. $1,500,000.

Que., Granby—HOUSING—La Cooperative d'Habitation de Granby, Inc., Granby, 44 houses in quadrilateral, St. Francois, St. Valier, St. Jacques and western city limits. $500,000.

Que., Hull—COLLEGE—Archeveche du Diocese d'Ottawa, Ottawa, Ont., plans by Rene Richard, 85 rue Prud'homme Hull, classical college, Bisson, Emond and Durocher Sts. $800,000. Bids early in April.

Que., Montreal—OFFICE—Owner, c/o M. Krauthammer, Dominion Sq. Bldg., project deferred indefinitely, 7 story, 8,000 sq. ft. per floor, bsmnt., concrete fdn.; rein.-con. or structural steel frame office. $600,000. David K. Linden, 310 Victoria Ave., archt. CD 6/4.

INDUSTRIAL BUILDINGS

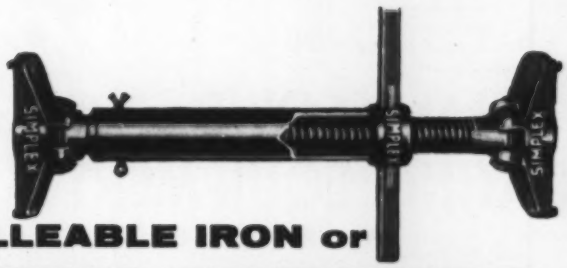
▲ **Ark., Forrest City**—PLANT—Yale & Towne Mfg. Co., 407 Lexington Ave., New York 17, N. Y., lock plant. $4,000,000.

Calif., Vernon—EXTRUSION—Aluminum Co. of America, 5151 Alcoa Ave., 110x320 ft., steel, corrugated aluminum externor Extrusion Bldg. 114, at 5151 Alcoa Ave. $750,000.

▲ **Conn., Greenwich** — WAREHOUSE — First National Stores, Inc., 5 Middlesex Ave., Boston, Mass., warehouse, Hamilton Ave. $5,000,000.

Conn., Norwalk—WAREHOUSE—Armstrong-Norwalk Rubber Corp., 20 Glover Ave., plans by Fletcher-Thompson, Inc., archt.-engr., 211 State St., Bridgeport, 6 story, 60,000 sq. ft., concrete warehouse addn. $600,000.

▲ **Ind., Indianapolis**—GRAIN ELEVATORS—Ind. Grain Co.-operative, 47-S-Penna St., grain elevators rein.-con. 51 round bins, hoist house, rein.-con. $1,500,000.



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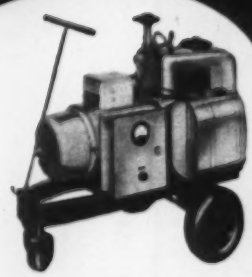

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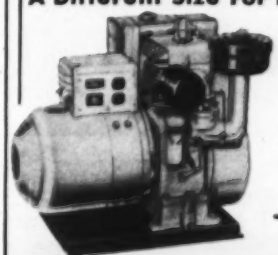

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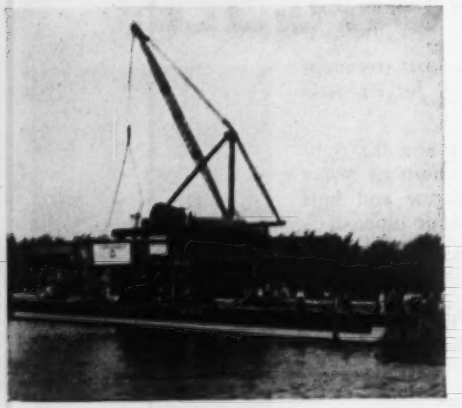

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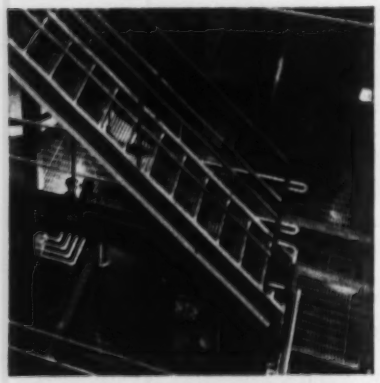

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▲ **Mass., West Concord**—PLANT—General Radio Co., 275 Mass. Ave., Cambridge, 3 story, 80,000 sq. ft. rein.-con. with brick facing addn. to present plant. $1,100,000. Bids within 60 days.

▲ **Minn., Minneapolis**—WAREHOUSE—Northern States Power Co., 15 S. Fifth St., plans by Brandhorst & Leadholm, 7600 Hy. 7, warehouse, 16 St. and Chestnut Ave. $1,550,000. Bids in spring or summer. CD 1/18.

▲ **Minn., North St. Paul**—PLANT—Northern States Power Co., 15 S. Fifth St., Minneapolis, propane air gas plant. $1,560,000. To go ahead in 1957.

▲ **O., Clyde**—FACTORY—Whirlpool-Seeger Corp., Clyde, 18,000 sq. ft. administration bldg. addn.; 156,000 sq. ft. parts storage bldg., north of Plant No. 3, connected to it by interbuilding conveyor sys. $2,000,000. Work will start soon. CD 10/21/55.

▲ **Okla., Oklahoma City**—PLANT—Continental Oil Co., 125 Park Ave., natural gasoline plant, in Short Junction Field, south of here. $1,750,000.

▲ **Wash., Bellingham**—KILN—Olympic Portland Cement Co., Ltd., 11x400 ft. cement kiln. $1,500,000. F. L. Smidth & Co., 11 W. 42 St., New York, N. Y., consult. engr. Work to start in March. CD 8/1.

▲ **Wash., Everett**—REFINERY—Richfield Oil Co., 579 5th Ave., New York, N. Y., refinery near here. Over $3,000,000.

Wash., Tacoma—BUS TERMINAL—Northwest Greyhound Lines, 8 Ave. and Stewart St., Seattle, plans by Decker, Christenson & Kitchin, 1411 4 Ave. Bldg., Seattle, Zone 1, bus terminal. $700,000. Bids this spring.

▲ **Ont., Sault Ste. Marie**—PLANT—Linde Air Products Co. (subsidiary of Union Carbide Canada, Ltd., 2221 Yonge St., Toronto, Ont.) 40 St. Clair Ave. E., Toronto, oxygen plant, West St. property. $3,000,000. C. G. Kauth, c/o owner, project engr.

Que., Ste. Madeleine—MILL—Antoine Guertin, Ltd., Ste. Madeleine, rebuild mill, Main Rd. $500,000.

UNCLASSIFIED

▲ **Calif., San Francisco**—PIERS, etc.—State Bd. of Harbor Comrs., c/o secy., Room 16, Ferry Bldg., San Francisco, Pier 48A and 48B extensions (600 ft.) $2,400,000; 150 ft. pier exten. at Pier 9, $400,000. S. S. Gorman, c/o owner, Room 19, Ferry Bldg., San Francisco, engr.

Colorado—RURAL DISTRIBUTION LINES—Y-W Electric Assn., Akron, 121 mi. rural distr. line and sys. imprvs., Yuma Co. $922,000. CD 1/18/54.

Conn., Stratford—COMMUNITY CENTER, etc.—Town, Town Hall, community center, 36x75 ft. indoor swimming pool, Sterling Park. $500,000. CD 9/13/44.

▲ **Ind., Indianapolis**—RECREATION CENTER—City Park Bd., 101 E. 27 St., recreation center at southeast corner of 16th and Northwestern, incl. $225,000 swimming pool, on 7 acre site. $1,000,000. City will pay for pool. Bd. for Fundamental Educ., Indianapolis, will finance sliding roof to provide year round operation of the pool, also build gym, tennis courts and baseball diamonds.

▲† **Ky., Louisville**—STORAGE AND REPRODUCTION FACILITY—Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va., plans by Harstern, Louis & Henry, McDowell Bldg., Louisville, ordnance drawing storage and reproduction plant. $1,000,000. E. R. Ronald & Assoc., 554 S. Third St., consult. engrs. Bids about Mar. 1. CD 10/25/55.

Minnesota—GAS TRANSMISSION LINE—Northern States Power Co., 15 S. Fifth St., Minneapolis, constr. high-pressure gas transmission line from Inver Grove St. Paul) to North St. Paul. $936,000. Constr. in 1957.

▲ **Mo., St. Louis**—AIRPORT IMPRVS.—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 Blvd. and Market St., Zone 3, extens., imprvs. Lambert-St. Louis Municipal Airport in St. Louis County, incl. airplane loading facilities by adding 10 gate positions, $340,000; air-conditioning loading fingers, $100,000; paving addnl. parking aprons for planes, $430,000; addnl. layer of paving on 6,000 ft. instrument runway 200 ft. wide, intersecting runway, $900,000. Total est. $1,800,000. CD 3/22/43.

▲ **Texas**—GENERATING PLANT—Brazos Electric Power Co-operative, Inc., 902 Amicable Bldg., Waco, generating plant, at Weatherford, Parker Co. $5,500,000. Laramore & Douglass, 332 S. Michigan Ave., Chicago 4, Ill., engrs. Bids about Apr. 1. CD 5/25.

Texas—RURAL DISTRIBUTION LINES—Lone Wolf Electric Co-operative, Colorado City, 108 mi. rural distr. lines and sys. imprvs., Mitchell Co. $711,000. CD 6/4/53.

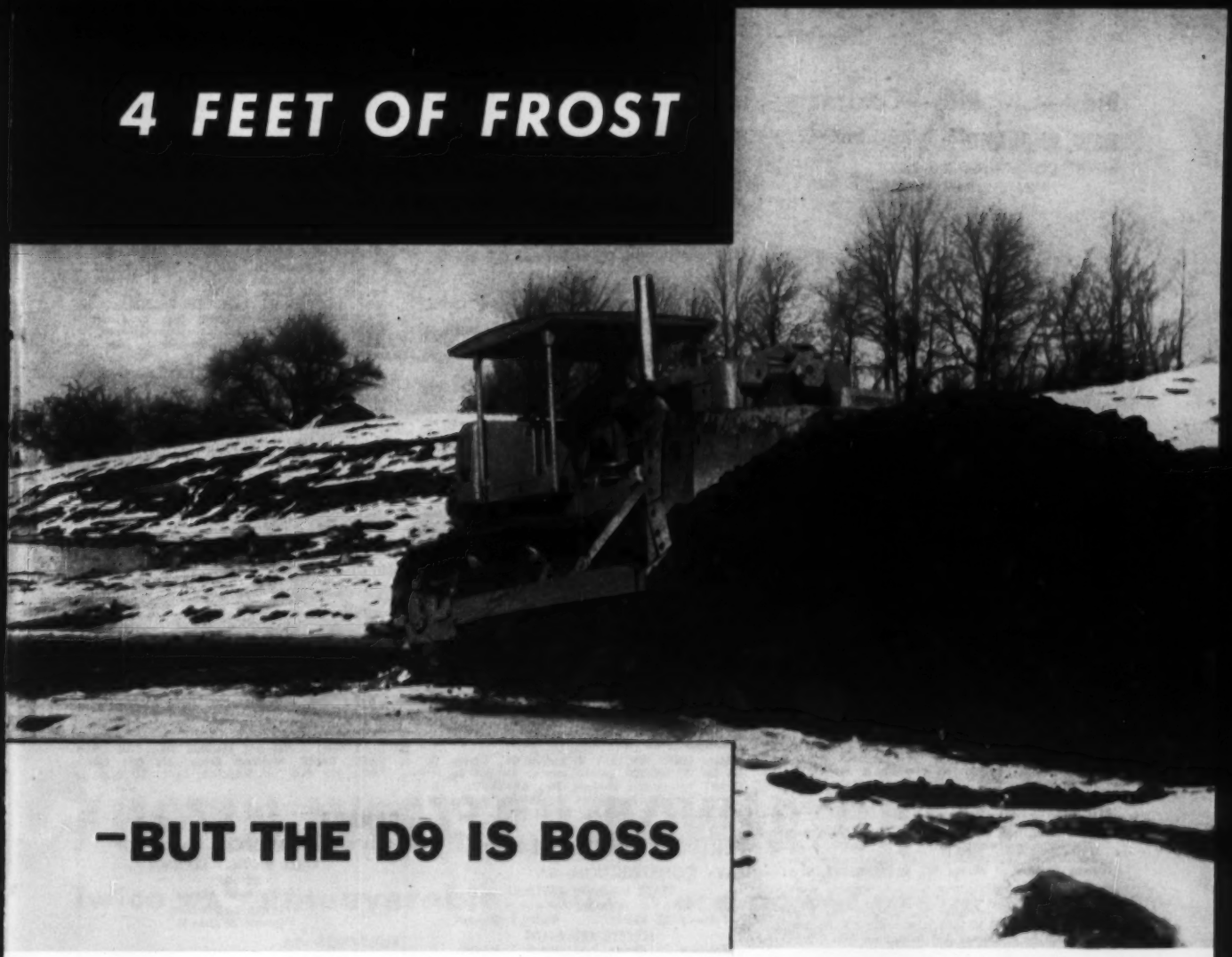
▲ **Tex., Houston**—STOCK SHOW, etc.—Houston Fat Stock Show, c/o Commerce Bldg., main plant for stock show exhibition, $7,500,000; indoor sports stadium, $1,250,000; stock barns and pens, $1,000,000.

▲ **Tex., Houston**—DOCKS, etc.—Port Comm., Navigation Dist., 1519 Capitol St., bond election Jan. 31, three new docks, $3,900,000; transit sheds, $600,000; access roads to new docks, $200,000; railroad facilities in port area, $1,750,000; 3 story foreign trade center atop existing navigation dist. offices, $550,000; general port imprvs., $5,000,000 (work not yet designated specifically). CD 1/5.

▲† **Washington**—PARK BRIDGE, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N.W., Wash. 25, D. C., constr. bridge over Nisqually River on road to Paradise Valley, $1,000,000; housing and storage bldg. at Paradise Valley in Mt. Rainier National Park, $349,000; revetments on Nisqually River in Mt. Rainier National Park, $300,000; roads in Coulee Dam area, $44,000. Work may start this summer on latter 2 projects.

▲ **Ont., Hamilton**—HARBOR REPAIRS—Dpt. P. Wks., Hunter Bldg., Ottawa, harbor repairs, imprvs., incl. Strathearne Ave. Wharf, Ship St. Terminal No. 3, Wellington St. extens. and dredging. $1,700,000.

4 FEET OF FROST



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HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 18 Connecticut

STREETS AND ROADS

February 19, 26 Massachusetts

BUILDINGS—LB & CA

▲ **Joseph Rugo, Inc.,** 581 Boylston, St., Boston, Mass. LB $5,229,000. (7 bidders) Proj. B131-133, intensive TREATMENT BLDG., Connecticut State Hospital, MIDDLETOWN, CONN. State P. Wks Dpt., 165 Capitol Ave., Hartford, Conn. Bids Feb. 6. CD 1/2.

▲ **Regional School Dist. 7,** 384 Main St., Winsted, Conn., rejected bids Jan. 4, Regional HIGH SCHOOL and AGRICULTURAL BLDG., Barkhamsted, Colebrook, Norfolk and New Hartford, WINSTED, CONN. LB $2,192,714. Will re-advertise. CD 1/8, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 28 New York

STREETS AND ROADS

February 28 New York

▲† **Pennsylvania**—BA About 3/19—U. S. Eng., 2635 Abbottsford Ave., Phila., Zone 29, dam and reservoir on Dyberry Creek, near Honesdale, Lackawaxen River, Wayne Co., will be 100 ft. high and about 1,200 ft. long at crest, outlet works consisting of concrete intake structure, 560 ft. concrete lined tunnel, 8 ft. diam. through rock and concrete-lined stilling basin cut in rock.

BUILDINGS—SLC

▲ **N. J., New Brunswick**—HOSPITAL—Middlesex General Hospital, 180 Somerset St., soon lets contract hospital addn. $2,000,000. Ferrenz & Taylor, 152 W. 42 St., New York 36, N. Y., archts. CD 12/19/55.

BUILDINGS—LB & CA

▲ **Lake Isle Estates Homes,** c/o Kern Realty Co., 124-26 Queens Blvd., Kew Gardens, N. Y. Owner Builds. $4,000,000. 100 HOUSES on 60 acre tract on Lake Shore Dr. west of Wilmot Rd., EASTCHESTER, N. Y.

▲ **Rolling Hills Homes,** c/o Julius S. Rapson, archt., 90-34 161 St., Jamaica, N. Y. and A. H. Salkowitz, archt., 87-25 Home Lawn St., Jamaica 32, N. Y. Owner Builds. $2,300,000. 100 HOUSES on tract at Little Neck Parkway and Horace Harding Expressway, LITTLE NECK, N. Y.

▲ **Hughes-Foulkrod Co.,** 809 Schaff Bldg., Phila., Pa. CA $3,500,000. general constr. 200,000 sq. ft. MFG. PLANT, BURLINGTON, N. J. Wood Conversion Co., 156-5 First National Bank Bldg., St. Paul 1, Minn. Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, Mich., archt.

▲ **Arthur Venneri Co.,** 300 North Ave., Westfield, N. J. LB $14,812,800. (5 bidders) construct and finance 1,000 housing units, (Capehart), ENG-18-020-57-21, FORT GEORGE G. MEADE, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore 18, Md. Bids Feb. 5. CD 1/10.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 19 South Carolina

STREETS AND ROADS

February 19 South Carolina

BUILDINGS—BA

▲ **Ky., Louisville**—HOSPITAL—BA 3/11—City, 323 E. Chestnut St., 4 story, brick, rein.-con., T-shaped general hospital addn., $2,910,000. Samuel Hannaford & Sons, Dixie Terminal Bldg., Cincinnati, O., archts. Joseph & Joseph, Speed Bldg., Louisville, assoc. archts. E. R. Ronald & Assoc., 554 S. Third St., Louisville, engrs. CD 2/8/56.

BUILDINGS—LB & CA

▲ **Williams & Dunlap,** 7722 Eastern St., Dallas Tex. CA $4,680,110. construct and finance 300 HOUSING units, Armed Services Proj. (Capehart), ENG-16-600-57-34, ALEXANDRIA, LA. Contg. Officer, Base Procurement Officer, Bldg. 1900, England Air Force Base, Alexandria, La. CD 1/15, under LB.

▲† **R. D. Selley Co., Inc.,** 1416 Lebanon Rd., Nashville, Tenn. CA $2,131,829. supporting facilities, 3 DISPENSARY BLDGS., POST EXCHANGE, THEATER, 2 MOTOR REPAIR SHOPS, BATTALION HEADQUARTERS, CHAPEL, CLASSROOM BLDGS., steam distr. sys., ENG-40-058-57-3, FORT CAMPBELL, KY. U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn. Bids Jan. 29, awarded Jan. 31. CD 2/4, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 19, 20 Michigan

STREETS AND ROADS

February 20 Michigan

▲ **ILLINOIS**—BA 2/28—Illinois Toll Highway Comn., 20 N. Wacker Dr., Chicago,

Contract ST-1, furnishing, fabricating, shop painting, erecting approx. 6,330,000 lb. girder spans for structure 1,766 ft. long across Ashland, South Park and Wood Aves. in addn. to rail yards, Markham Yard Bridge, on Tri-State Route.

Contract SNU-4, furnishing, fabricating, shop painting and delivering approx. 22,557,000 lb. girder and beam spans for 21 Tri-State Structures, Contract SNI-4, divided into SNI-4A, SNI-4B, SNI-4C, with c. conver. 8, 6 and 7 bridges respectively. May bid individually or as a whole.

SNI-5, furnishing, fabrication, shop painting and delivering approx. 4,388,000 lb. girder and beam spans for 3 structures on Tri-State Route and 2 on East-West Route. CD 5/11.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

Contracting & Material Co., 1235 Dodge St., Evanston, Ill., Kenny Constr. Co., 3220 Oakton St., Skokie, Ill., and **Louis Garavaglia,** 24240 Mound St., Centerline, Mich., LB $3,487,739. Contract N-6-A, grading, drainage, paving, etc. precast concrete bridges 4.64 mi. from E. of Fox River to E. of Bartlett Rd., Kane Co. Bids Jan. 31. CD 2/5, under LB. (Correction—low bidder).

▲ **M. J. Boyle & Co.,** 2489 N. Elston Ave., Chicago, Ill. CA $9,600,000. bascule bridge East Ohio and north branch of Chicago River, CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. CD 2/23/56.

BUILDINGS—LB & CA

▲ **Maxon Constr. Co.,** 131 N. Ludlow St., Dayton, O. CA Est. $3,500,000. general constr., 230,000 sq. ft. PLANT for electric products div., GREENVILLE, O. Corning Glass Works, Walnut St., Corning, N. Y. Bids Dec. 11, awarded Jan. 30. CD 11/30.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 21 Kansas — March 1 Missouri

STREETS AND ROADS

February 22 Kansas — March 1 Missouri

BUILDINGS—BA

▲† **Mo., Kansas City**—MANUFACTURING SUPPORT—BA 2/19—Office Wilson & Co., Engineers & Architects, 705 E. Crawford St., Salina, Kan., constr. light mfg. bldg. and support facilities, incl. electrical, plumbing, and fire protection systems, drives, parking facilities and fencing, Bendix Aviation Corp., Kansas City, Mo. for Atomic Energy Comn., P.O. Box 202, Kansas City 41, Mo., $2,200,000-$2,400,000. Extended date. CD 1/10.

BUILDINGS—LB & CA

▲ **Craftsmen Constr. Co.,** 1337 E. 18 Ave., Denver, Colo., CA, $3,282,785, Lakewood HIGH SCHOOL and Wheatridge HIGH SCHOOL, LAKEWOOD, COLO. Jefferson County School Dist. R-1, 1580 Yarrow St., Lakewood, Colo. Bids Jan. 10, awarded Jan. 30. CD 1/21, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., Long Beach**—BA 3/1—City Council, City Hall, constr., Lakewood Blvd. and Spring Sts. underpasses at Long Beach Municipal Airport, Spec. R-2591. $3,800,000. Plans deposit $100. Moffatt & Nichols, 122 W. 5th St., consult. engrs. CD 4/2.

▲† **California**—BA 3/6—U. S. Eng., 751 S. Figueroa St., Los Angeles, Chino and San Antonio Creeks imprvs., Santa Ana River Basin Flood Control Proj., San Antonio Dam to Holt Ave., Orange Co., Serial No. CIVENG-04-353-57-31. $3,000,000. CD 1/20/45.

BUILDINGS—BA

▲ **Ore., Pendleton** — SCHOOL — BA 3/19 — Pendleton School Dist. 16C, high school. $2,000,000. Culler, Gale, Marell & Norris, Realty Bldg., Spokane, Wash., archts. CD 1/18.

HEAVY CONSTRUCTION—LB & CA

▲† **Donald M. Drake Co.,** 160 N. W. Savier St., Portland, Ore., CA $2,036,476 hospital and utilities, Mountain Home Air Force Base, ENG-45-164-57-11, MOUNTAIN HOME, IDAHO. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Jan. 15, awarded Jan. 18. CD 1/23, under LB.

▲ **Westinghouse Electric Corp.,** 3 Gateway Center, East Pittsburgh, Pa., CA $16,020,000. furnishing, erecting seven 107,000-kva generators and voltage regulators for Rocky Reach Power Projects, Wenatchee, WASHINGTON. Chelan Co. Public Utility Dist., Wenatchee, Wash. Bids Jan. 4. CD 1/8, under LB.

▲ **Shell Pipeline Corp.,** 1228 Shell Bldg., Houston 1, Tex. CA Est. $50,000,000. 600 mi. 16 in. crude oil line from Four-Corners, Utah to Los Angeles, Calif., CALIFORNIA-NEVADA-UTAH. Four Corners Pipe Line Co., (Shell Oil Co., Standard Oil Co. of California, Continental Pipe Line Co., Superior Oil Co., Richfield Oil Corp., Gulf Oil Corp.), c/o contractor.

▲† **Guy F. Atkinson Co., M. J. Bevanda, Charles L. Harney Inc., Ostrander Constr. Co., A. Teichert & Son and Trepte Constr. Co., Inc.,** 10 W. Orange Ave., South San Francisco, Calif., LB $48,928,100 est. $37,570,870 (7 bidders) Trinity Dam, main unit of Trinity River Div., Central Valley Proj., Spec. DC 4824, CALIFORNIA Bureau Reclamation, Dpt. Interior, Weaverville, Calif. Bids Feb. 5. CD 12/19.

▲ **M and K Corp.,** 405 Montgomery St., San Francisco, Calif., CA $16,300,000. Caribou No. 2 Powerhouse on Feather River North Fork some 46 mi. northeast of Oroville, CALIFORNIA. Pacific Gas & Electric Co., 245 Market St., San Francisco, Calif. CD 4/18.

▲ **Wismer & Becker,** 1731 South St., Sacramento, Calif., CA Total est. $35,000,000. installing 2 turbines and generators, related electrical and mechanical equip. at Poe Powerhouse, 20 mi. from Oroville, CALIFORNIA. Pacific Gas & Electric Co., 245 Market St., San Francisco 6, Calif.

▲ **Moore Drydock Co.,** foot of Adeline St., Oakland Calif. Owner Builds. $6,000,000. 730x142 ft. floating drydock 52 ft. high, OAKLAND, CALIF.

BUILDINGS—LB & CA

▲ **Allen & Garcia Co.,** 332 S. Michigan Ave., Chicago, Ill., CA $3,000,000. COAL CLEANING PLANT, near WELLINGTON, UTAH. Columbia-Geneva Steel Div., U. S. Steel Corp., Russ Bldg., San Francisco, Calif.

▲ **Peninsula Pacific Constr. Co.,** 1515 Valparaiso St., Menlo Park, Calif. Owner Builds. $3,200,000. constr. 80 HOME SUB-DIVISION, Stanford University, foothill property, MENLO PARK, CALIF. CD 2/5/57, under Peninsula Housing Assn., as owner.

▲ **William J. Moran Co.,** 1011 S. Fremont St., Los Angeles, Calif., CA $4,000,000. 7-8 story, 900-stalls, GARAGE, incl. elevators, ramp entrance, shops on street floor, Sutter and Stockton Sts., SAN FRANCISCO, CALIF. Merchant Group, c/o City Parking Auth., City Hall, San Francisco, Calif. CD 2/24/55.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 18 Alberta

STREETS AND ROADS

February 20 Ontario

BUILDINGS—BA

▲ **B. C., Vancouver**—CIVIC AUDITORIUM—BA 3/5—City, City Hall, steel, concrete civic auditorium at Hamilton and Dunsmuir Sts. $2,000,000. Plans deposit $100. Gardiner, Thorton, Gathe & Assocs., 1520 Alberni St., archts. CD 7/10.

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria,

Dominion Bridge Co. Ltd., 2850 Boundary Rd., Burnaby, B. C., CA $11,099,672, steel superstructure for 2nd Narrows Bridge between Vancouver and North Vancouver. Awarded Jan. 31. CD 11/20, under LB.

BUILDINGS—LB & CA

▲ **Foundation Co. of Canada Ltd.,** 1220 Bay St., Toronto, Ont. CA $65,000,000. constr. work at Nickel MINE, incl. 2 mine surface plants, mill smelter and service buildings, on Moak Lake area, 400 mi. north of Winnipeg, MANITOBA. International Nickel Co. of Canada Ltd. 25 King St. W., Toronto, Ont. Awarded Jan. 31. CD 12/7, under Unclassified.

ALASKA

HEAVY CONSTRUCTION—BA

▲† **Alaska**—DEW LINE STATIONS—BA 2/21—U. S. Eng. 4735 E. Marginal Way, Seattle 4, Wash., DEW-line stations at Cold Bay and Cape Sarichef, Inv. 57-58. Est. $7,000,000. Extended date. CD 1/23.

▲† **Alaska**—DEW LINE STATIONS—BA 3/1—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., DEW-line stations at Port Heiden and Port Moller. Inv. 57-59.

▲† **Alaska**—DEW LINE STATIONS—BA 3/8—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., DEW-line stations at Driftwood Bay and Nikolski. Inv. 57-60.

▲† **Alaska**—NIKE GUIDED MISSILE INSTALLATIONS—BA 3/15—U. S Eng., 4735 E. Marginal Way, Seattle 4. Wash., Nike guided missile installations at Elelson Air Force Base near Fairbanks, incl. constr. battery control, launcher control, fuel storage bldgs. and launching structures at 4 sites, Inv. 57-29; electrical distribution systems for the sites. Total est. $10,000,000. CD 6/18. under LB

(Proposal Advertisement see pp. 109 to 111)

Working around short-radius curves is easy for Austin-Western Power Graders . . . impossible for graders with front steer only.

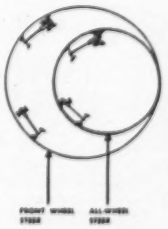
AUSTIN-WESTERN POWER GRADERS

Twice as maneuverable...30% more power at the blade

Only Austin-Western offers you the unbeatable combination of all-wheel steer *plus* all-wheel drive *plus* torque converter drive in 4-wheel and 6-wheel models. All-wheel steer means top maneuverability . . . you ditch around sharp curves, move dirt up slopes from deep, wet ditches, grade superelevated curves with no gouging or wasting. A-W Power Graders turn around on narrow roads with only one backup, travel quickly and easily where ordinary models cannot go, move the heaviest windrows farther and faster. All-wheel drive means that every pound of the machine is harnessed to a driving wheel – no idling wheels, no lazy front ends to use up power and lower efficiency. Every pound is working weight, contributing 100% to traction, utilizing the whole engine output, delivering maximum power where it counts – at the blade.

Together, all-wheel steer and all-wheel drive make possible A-W's unique Controlled Traction. By offsetting the machine, the operator can put front and rear wheels where traction is best, can eliminate all side-thrust at the toe of the blade (usable over its entire length), and can balance the whole power of the grader against the load.

In addition, you get unusually versatile blade manipulation, and fingertip management of all blade and wheel movements by full hydraulic control. And A-W Power Graders have the most complete line of time- and labor-saving attachments in the industry. See your nearby A-W distributor. Or write us for detailed information.



The two circles above, with their 62 and 90-ft. diameters, illustrate the difference that all-wheel steer makes. This extra maneuverability saves time on every job, makes it possible to do more jobs—faster, easier and cheaper every month of the year.

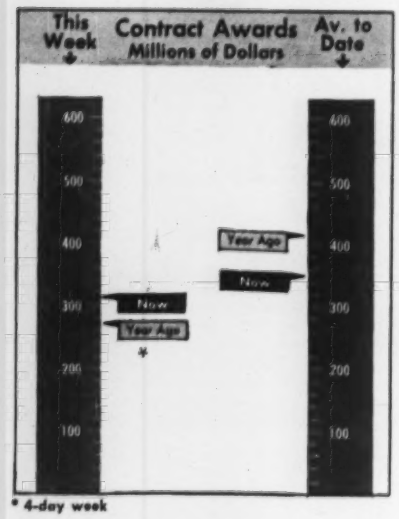
All-wheel steer and all-wheel drive team up with the blade on A-W Graders —the rear drivers push behind the toe of the blade, the front drivers pull ahead of the heel of the blade. As a result, the machine moves straight ahead under perfect control.

Power Graders • Motor Sweepers • Road Rollers • Hydraulic Cranes

AUSTIN-WESTERN WORKS
BALDWIN-LIMA-HAMILTON
Construction Equipment Division
OTHER DIVISIONS: Eddystone • Lima • Electronics & Instrumentation • Hamilton • Loewy-Hydropress • Standard Steel Works • Madsen • Pelton
AURORA, ILLINOIS, U.S.A.

Construction Scoreboard

Activity this Week



* 4-day week

AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 7 wks 1957	Chge %
	millions		
Federal	$21.1	$275.4	−4
State and Municipal	107.4	902.9	+9
Total Public	128.5	1,178.3	+6
Total Private	183.1	1,225.5	−33
U. S. Total	$311.6	$2,403.8	−18
By Type of Work			
Waterworks	$5.2	$46.1	+14
Sewerage	2.1	63.0	−52
Bridges	12.4	87.1	+14
Highways	32.4	343.3	+31
Earthwork, Waterways	18.0	146.1	+72
Buildings:			
Public, Excl. Housing	36.2	287.3	+8
Public Housing	1.4	41.6	−33
Private Housing	36.5	417.4	−51
Commercial	12.6	102.7	−71
Industrial	23.2	564.5	+5
Unclassified	131.6	304.7	+15
U. S. Total	$311.6	$2,403.8	−18

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

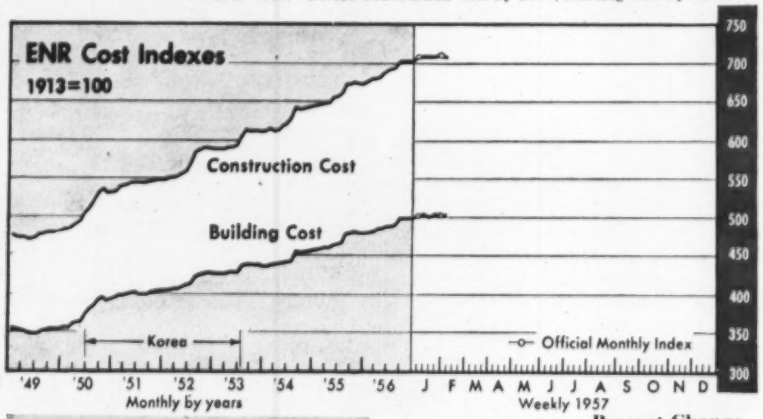
NEW CAPITAL FOR CONSTRUCTION

	Week of Feb. 7	Cum. 6 wks 1957	Chge '56-'57 %
	millions		
Corporate Securities	$132.1	$700.2	+249
State and Municipal:			
All Except Housing	150.3	595.4	+43
Housing	...	6.6	−100
Federal Loans	...	13.1	+34
Federal Aid	...	...	...
Total Nonfederal	$282.4	$1,308.7	+107
Federal Appropriations:			
In U. S.	...	...	...
Outside U. S.	...	...	...
Total New Capital	$282.4	$1,308.7	+107

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of Feb. 7 1957	% Change from Jan. 10 1957	% Change from Feb. 9 1956
Construction Cost	709.00	+0.01	+4.3
Building Cost	501.73	−0.2	+3.9

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



CONTRACTS AWARDED

	1957 January (millions)	1957 1-Mo. (millions)	Percent Change from 1956 Jan.‡	Percent Change from 1956 1-Mo.‡
Total U. S., ENR reported	$1,663.7	$1,663.7	−16	−16
Private	773.1	773.1	−29	−29
Public	890.6	890.6	−2	−2
State and Municipal	667.4	667.4	+0.5	+0.5
Federal	223.2	223.2	−8	−8
ENR Volume Index, 1913 = 100	504	504	−22	−22

NEW CONSTRUCTION CAPITAL

	January (millions)	1-Mo. (millions)	Percent Change from 1956 Jan.‡	Percent Change from 1956 1-Mo.‡
Total U. S.	$1,026.3	$1,026.3	+112	+112
State and Municipal Bond Sales	445.1	445.1	+36	+36
Corporate Security Sales	568.2	568.2	+288	+288
Federal Loans, Aid (nonfederal work)	13.1	13.1	+19	+19
Federal Appropriations (federal work)	0	0	...	...

‡ Based on average week

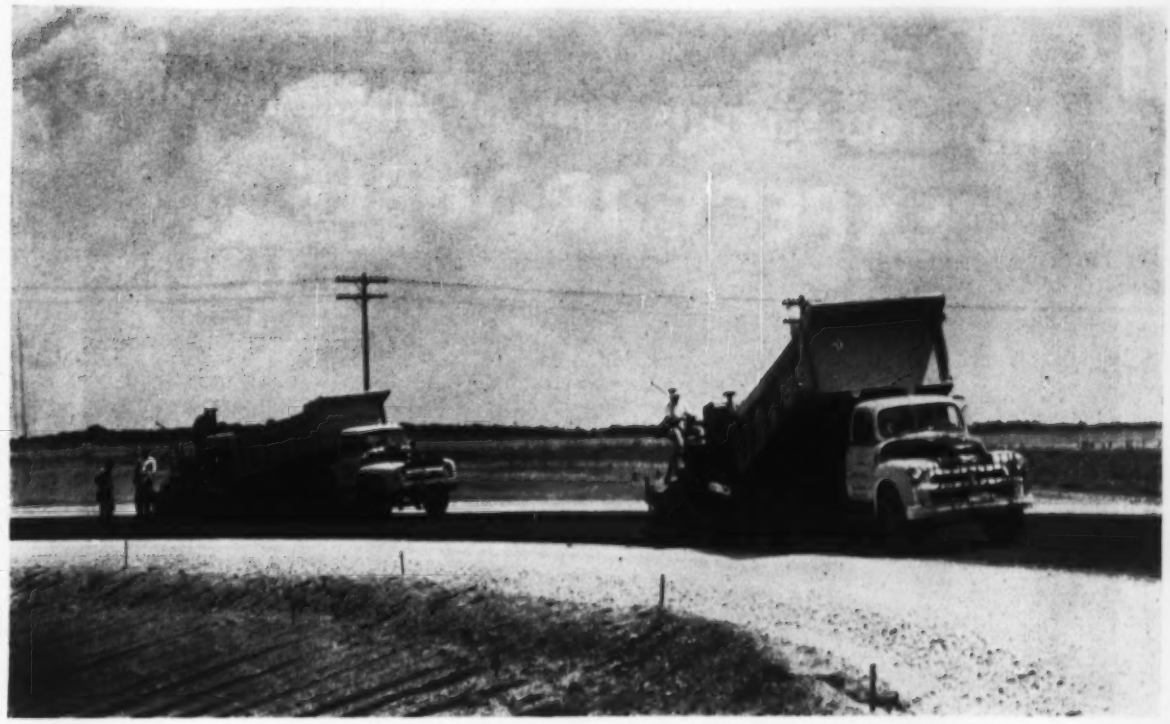
MATERIALS SHIPMENTS

	Unit	1956 Oct. (O) Nov. (N) Dec. (D)	Cum. (No. of Mos.)	Percent Change from Year Ago Mo.	Percent Change from Year Ago Cum.
Portland Cement, Bur Mines	thous bbls	31,354(O)	268,240(10)	+9	+6
Conc Paving Awards, PCA	thous sq yd	6,501(D)	84,932(12)	−21	−9
Fabricated Structural Steel	thous tons	298(D)	3,205(12)	+20	+7
Bookings, AISC	thous tons	404(D)	4,013(12)	+10	+9
Reinforcing Bars, Net, AISI	thous tons	250(N)	2,278(11)	+29	+16
Lumber, NLMA	mil fbm	2,804(N)	33,965(11)	−9	−8
Orders	mil fbm	2,809(N)	33,636(11)	−6	−9
Production	mil fbm	2,975(N)	34,949(11)	−4	−3
Douglas Fir Plywood, DFPA, 3/8" basis					
Production (aver per week)	mil sq ft	94.9(D)	99.9(12)	−0.3	+6
Orders (average per week)	mil sq ft	94.8(D)	96.1(12)	+5	+4
Clay Products, Bureau of Census					
Brick, Ungl, Common, Face	mil bri	600.8(O)	5,782.0(10)	−6	−3
Vitrified Clay Sewer Pipe	thous tons	186.8(O)	1,605.3(10)	+9	+0.4
Structural Tile, Unglazed	thous tons	60.9(O)	576.0(10)	−17	−19
Asphalt Products, Bureau of Census					
Asphalt Roofing	thous sales sqs	4,011(N)	57,038(11)	−14	−4
Asphalt Siding	thous sales sqs	124(N)	1,168(11)	+0.1	−4
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable)	mil lbs	72.2(N)	987.8(11)	−21	+3
Wire and Cable	mil lbs	23.2(N)	278.9(11)	+6	+19
Extruded Shapes (soft alloys)	mil lbs	52.1(N)	596.2(11)	−9	+2

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS	thous	3,000(D)	3,038(12)*	+9	+9
Contractor Failures, Dun & Bradstreet					
Number		183(D)	1,834(12)	+35	+31
Liabilities	thous	$8,149(D)	$100,803(12)	+11	+21

* Average per month



Four more improvements in the Barber-Greene Finisher

Four new improvements give the Barber-Greene Finisher faster speed, faster travel, lower maintenance cost and increased power.

Improving the Barber-Greene Finisher is not something new. Scores of major improvements have been embodied in its design since it was first released to the field 20 years ago.

These improvements have been incorporated without spectacular announcements or fanfare. They have all been based on vast experience. In fact, the Barber-Greene Finisher is now paving its second million miles, which is many times the mileage and tonnage records of all other asphalt paving machines in the world combined.

These are all proven, sound improvements developed from experiences in laying every type of mix, in virtually all conditions. Machines embodying this group of design changes are now in production and are designated as the Model 879-B.

Latest improvements include:

NEW TRANSMISSION—Provides both higher operating and travel speeds. The new transmission still provides 12 forward speeds giving a wider range of operation.

HIGHER SPEED TAMPER—This new design permits faster laying speeds and reduces maintenance costs.

NEW CRAWLERS—Precision-drilled pads and larger pins will further decrease maintenance costs.

NEW POWER UNIT—20% more power. This means pushing even bigger trucks, handling even steeper grades, greater reserve for high altitude, and higher speeds of operation.

Note To Barber-Greene Finisher Owners

These latest improvements, as well as many previous improvements, can be incorporated in your old machine. Necessary parts are now made up in kit form for each modification separately. A folder describing the various kits is available.

57-3

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

WHEN YOU SEE THIS KIND OF WORKMANSHIP,

EXPECT TROUBLE...

GOOD workmanship is one of the most important factors in preventing leaky brick walls.

Good workmanship includes wetting the brick, securing full head and bed joints, backplastering the face brick—*and laying the brick carefully to keep the bond. The position of the brick should never be shifted after the mortar has stiffened.*

Expect trouble when brick are shifted or tapped into place after the mortar has stiffened. Cracks will result and the wall may leak.

Brixment mortar has high water-retaining capacity. It resists the sucking action of the brick. It stays plastic and workable longer. Brixment mortar therefore makes it easy for the bricklayer to lay the brick accurately, before the mortar has stiffened.

Brixment mortar has great plasticity, high water-retaining capacity and bonding quality, great resistance to freezing and thawing, and freedom from efflorescence. Because of this *combination* of advantages, Brixment is the leading masonry cement on the market.

BRIXMENT

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY

FHA Backs 'Package' Deals

Commissioner Mason supports homebuilders who include large appliances in basic mortgage

The homebuilding industry is winning another Congressional battle with critics who would put a big crimp in its volume buying practices.

The issue: Whether to forbid the Federal Housing Administration from continuing its "package mortgage" operation, wherein it writes FHA-insurance not only on homes but also a wide variety of appliances and basic furnishings.

Furniture retailers and electrical contractors want the federally-backed package mortgage legislated out of existence. The National Assn. of Home Builders is the package's strongest defender. The association calls the attack on it "a sharp and bitter assault upon the financing and mass production methods of the modern homebuilding industry."

Strong support for the homebuilders' position comes from Norman P. Mason, Commissioner of the Federal Housing Administration, who has made a formal report to Congress setting out the official governmental view. The Mason report, made at the request of Chairman J. William Fulbright's Senate Banking and Currency Committee, weighs the pros and cons of having FHA insurance cover such items as ranges, air conditioners, refrigerators, washing machines and window shades.

Mason cites these principle arguments for continuation of the package mortgage:

- Industry and home purchasers get the same privileges under FHA's package plan as they enjoy under other systems of financing available in their locality. The appliance and other accessory items permissible for financing via FHA vary from community to community, depending on custom and practice of local financial institutions. Thus it is that air conditioning units are eligible for FHA insuring in only 14 areas, while built-in ovens are acceptable in 72, and electric or gas ranges in 65. (See table.)
- Inclusion of such accessory items allows purchasers to obtain labor-saving equipment they might not be able to afford if such items had to be financed outside the FHA mortgage.
- There is protection to the buyer in present practices—"most builders include nationally recognized products because of their added sales appeal."
- Knowing the size and type of items proposed permits a designer to plan a more efficient and usable room.

Mason raises these principal disadvantages:

- Interest on long-term financing more than offsets a favorable purchase price when such items are part of the package.
- Purchasers may have (1) possible difficulties in replacing built-in equipment when replacement is necessary or (2) less choice in selection of items they want or need.
- Homeowners sometimes repay debt incurred for these items long after the appliance's useful life.

Mason finds the advantages for outweighing the disadvantages. He notes also that "the trend is to include more and more items in the mortgage" and "it would be a great disadvantage to the home-buying public to place FHA in a reactionary position toward the general trend."

Fulbright's Senate committee, at one point in 1956, was on the verge of putting limitations on the package. The National Retail Furniture Assn. was the driving force behind the move then. Since then the National Electrical Contractors Assn. has also joined the campaign.

Best appraisal of the future: The Banking Committee will not be inclined to give the problem much more than routine consideration and probably will hope to let the limitation proposals die a quiet death in committee.

Items Locally Eligible

(Survey of 75 FHA offices)

	Yes	No
Air-conditioning units	14	57
Awnings, metal or wood	40	35
Cooking units (counter top)	70	4
Dehumidifiers (separate units)	2	69
Dishwasters, automatic built-in	73	1
Clothes dryers (gas or electric)	59	15
Fences, metal or wood	64	11
Fireplace screens, built-in	25	49
Garbage disposers (grinders)	72	2
Garbage receptors (sunken, etc.)	31	43
Jalousies (as exterior shutters)	40	33
Kitchen mixers, built-in	18	53
Ovens, built-in	72	2
Ranges, electric or gas	65	10
Refrigeration units (deep freezers)	21	52
Refrigerators, mechanical	68	7
Screens, window or door	72	2
Space heaters (free standing)	35	39
Venetian blinds	45	29
Ventilating fans, built-in	70	4
Washing machines (automatic)	59	15
Water softeners	41	29
Window shades	14	60

Kaiser Purchases Wire Business of U. S. Rubber

Kaiser Aluminum & Chemical Corp. has purchased the wire and cable business of the United States Rubber Co.

The purchase, for an undisclosed sum, is effective Feb. 1. It includes U.S. Rubber's insulated wire and cable plant at Bristol, R. I., and its wire and cable inventories.

In addition, Kaiser Aluminum takes over U.S. Rubber's nationwide wire and cable sales organization and network of distributors as well as all Bristol plant personnel. Service to existing customers will be maintained through the same distributors.

Virginia Must Boost Gas Tax to Finance Highways

After several months of study the state of Virginia has been told that it must increase its gasoline tax and automobile registration fees if it is to build the roads the state needs in the next 13 years.

Parsons, Brinckerhoff, Hall & Macdonald of New York, retained in 1956 by the Virginia Advisory Legislative Council to make the survey, recommended an increase of one cent on gasoline tax, an increase of one cent on diesel motor fuel tax and an average $2 per vehicle increase in registration fee.

It was estimated that Virginia will require more than $2.1 billion over the next 13 years for highways, and with the present tax and fee rates only about $1.5 billion can be realized.

U.S. Creating Too Much Debt, Too Fast, Banker Says

Too much debt is being created too fast in the United States today, the chairman of J. P. Morgan & Co. warned the Nashville Chamber of Commerce.

The Morgan chairman, Henry C. Alexander, pointed to the total private debt which he said "now constitutes a gigantic pledge against earning power for some years to come.

"I think we have been overdoing it,"

he said, "and I caution that there is danger in it. We hear it said that our money is too tight, but I think the trouble may be that, economically speaking, our living is too loose. We had better spend a little less and save a little more.

"If we buy and build and borrow too fast we will surely spiral the economy with higher and higher prices, with maladjustments in production and consumption, and with excesses of debt. And, if we do, then will come the inevitable collapse with its dreadful aftermath. If that happens, the blame will fall—rightly or wrongly—on businessmen."

Columbus Becomes Biggest City in Ohio—in Area

The City of Columbus became the largest in Ohio—in land area—with the city council's action of last week accepting 7,100 acres in three townships.

Judge Myron B. Gessaman cleared the way for the annexation when he dismissed a suit restraining annexation of the entire Marion Township School District.

Addition of the 11.09 sq mi of territory brought the Ohio capital city's land area to 79.13 sq mi, compared with 76.18 sq mi for Cincinnati and 73.43 for Cleveland.

Beset by growing pains, Columbus has nearly doubled its size in the past three years.

Dealer Buys Supplier

Potlatch Yards, Inc., Spokane building materials firm with 45 branches in Washington and Idaho, has acquired control of Graystone, Inc.

Graystone manufactures concrete pipe, concrete blocks, ready-mix concrete and other building materials. The firm operates plants that are located in Seattle, Aberdeen, Bellevue, Centralia, Chehalis, Everett, Olympia and Shelton, Wash.

Construction Markets

Providence: An On-the-Spot Report

"The construction market in Rhode Island should be at least as good in the next four to six months as it was in the same period last year—and indications are that it probably will be a great deal better.

"Our company alone has quite a bit of work ahead and there are many other projects either about to come off the architects' boards or being readied for bids by spring."

That's the optimistic prediction of Edward P. Turgeon, president of E. Turgeon Construction Co., of Providence, R. I., one of the largest general contractors in the nation's smallest state.

He is not alone in such optimistic forecasting. A spokesman for Gilbane Building Co., another large Rhode Island Contractor, and several other builders indicated that they expect to be busy this year.

If there is a single motivating force in the spurt of construction activity shaping up in Providence and throughout the state, it can be described by the word "renewal."

The 320 year old City of Providence and several of its venerable sister communities have reached the point where they must rebuild or decay.

There is a surge of renewal projects, either planned or in progress, not only under formal federal-city urban redevelopment programs, but in private and public works spheres as well.

The city has two major redevelopment projects. One is a 58 acre, $8 million industrial redevelopment project in the West River section where land now is being cleared. The other is the 18 acre Willard Center in South Providence where a $500,000, 23 store shopping center, a $1.4 million elementary school and a large playfield are being built.

In the private commercial field, an outstanding project is a 10-story, $2.5 million office building to be built in the heart of Providence by Howard Realty Co. This will be the first new, general purpose office building to be constructed in the city since 1926.

This office building, incidentally, will replace a smaller structure recently razed because of foundation flaws which developed when downtown Providence was flooded in the 1954 hurricane. Construction on the new building begins this month, with George A. Fuller Co. holding the general contract.

REINFORCED CONCRETE PIERS (lower center) and some of the approaches (top right) of the $15 million Providence River Bridge represent the first phase in a proposed $86.6 million North-South Freeway.

This also should be a banner year for public works. An estimated $30 million worth of contracts will be let in the next few months for the federal-aid highway program in the state.

Add to this a rash of elementary school construction projects either under way or in final planning stages in communities such as Cranston, Warwick, Warren and Barrington, as well as the recent construction start on a $5 million campus expansion for the Rhode Island College of Education.

Still in the public works field, the University of Rhode Island, at Kingston, soon will begin a $5 million expansion program calling for construction of seven new buildings, remodeling of three others and demolition of eight structures. Brown University, in Providence, plans a new engineering building, a new Pembroke College dormitory and new athletic facilities as part of a $3 million expansion.

Perhaps the most spectacular project now changing the face of Providence is the $15 million Providence River Bridge and approaches, first phase of a multi-million-dollar North-South Freeway loop through the city.

As in other areas, the tight mortgage money situation has caused Rhode Island homebuilders to retrench.

Canadian Builders Predict Sharp Drop in Housing

Canadian builders are expecting a sharp down turn in housing in 1957.

Harry J. Long, president of the National House Builders Association, told the group's annual meeting in Montreal that the rate of homebuilding in Canada will be down drastically this year.

He said completions this year will total 100,000 to 110,000 in contrast with the 1956 estimate of 135,000 housing units.

More intense competition for mortgage money was cited as the principal reason. The reduced rate of construction will be felt most in the lower bracket homes, Long predicted.

Detroit Plans Tax Boost To Pay for New Schools

A plan to place a three-mill levy on the ballot April 1 to raise money for new schools has been approved by the Detroit Board of Education.

If taxpayers approve the issue, approximately $33 million worth of construction will result. About $30 million of this total would be spent for new construction.

Bid Competition Keen On Colorado Highway Jobs

Competition for Colorado's Highway Department construction contracts is up sharply.

An average of ten firms competed for each contract in 1956, compared with eight firms in 1955.

The Colorado Highway Department awarded contracts in 1956 on 87 projects on which bids totaled $30.4 million. The department said its advance estimates on the bids were only 4/10 of 1% off the actual winning bid. The department's 1955 estimates were off 1.5% and in 1954 they were off 5.6% from the winning bid amount.

Caterpillar Reports Record Sales, Profits for 1956

Noting continued high demand for construction machinery, Caterpillar Tractor Co. reported record sales and profits for last year. The company said its profits were equal to $6.08 a share, compared to $4.18 in 1955.

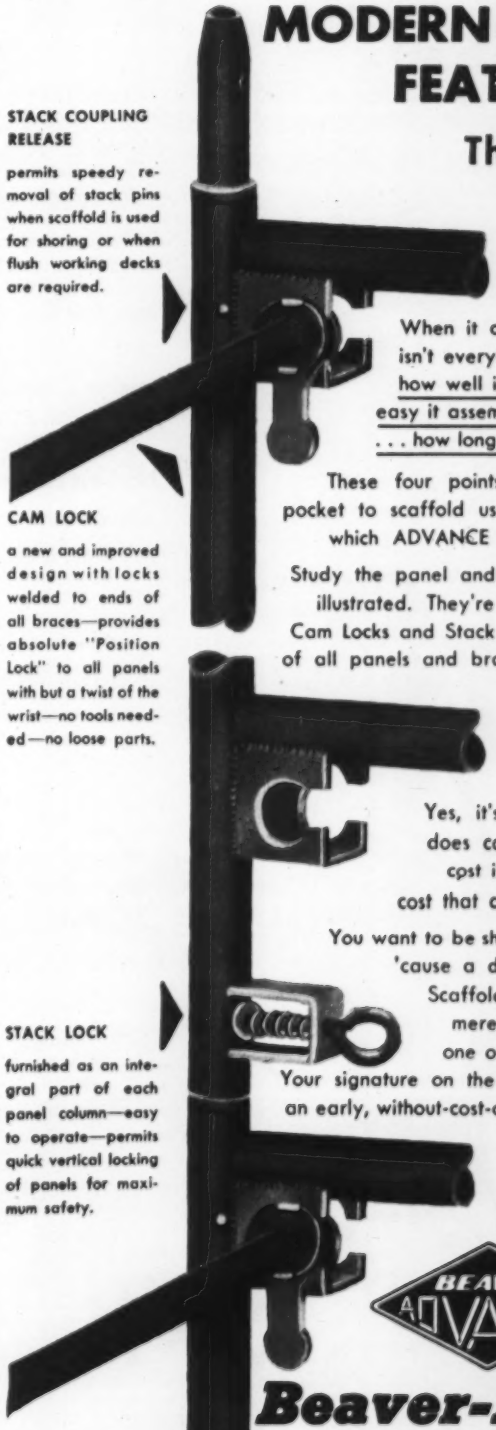
Sales totaled almost $686 million, up 29% over 1955 total of $533 million. Net profits were up 54% to $55.4 million from $35.9 million in 1955.

For the first time, the 1956 figures include the consolidated results of Caterpillar's foreign subsidiaries.

(*B&F continued on page 104*)

MODERN SCAFFOLD FEATURES

That Mean More Profitable Jobs For You



STACK COUPLING RELEASE

permits speedy removal of stack pins when scaffold is used for shoring or when flush working decks are required.

CAM LOCK

a new and improved design with locks welded to ends of all braces—provides absolute "Position Lock" to all panels with but a twist of the wrist—no tools needed—no loose parts.

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furnished as an integral part of each panel column—easy to operate—permits quick vertical locking of panels for maximum safety.

When it comes to scaffold, first cost isn't everything. What really counts is how well it's made . . . how fast and easy it assembles . . . how safe it stands . . . how long it lasts.

These four points can mean money-in-the-pocket to scaffold users. They're four points in which ADVANCE Scaffold knows no equal.

Study the panel and brace locking features as illustrated. They're exclusive with ADVANCE! Cam Locks and Stack Locks are an integral part of all panels and braces. Deficiencies of costly, time consuming nut, bolt and clamp methods of assembly have been entirely eliminated.

Yes, it's true—ADVANCE Scaffold does cost a little more. But first cost is only relative. It's the last cost that counts.

You want to be shown? That's a fair request, 'cause a demonstration of ADVANCE Scaffold speaks much louder than mere words . . . proves every one of the points that we make. Your signature on the coupon below will assure an early, without-cost-or-obligation demonstration.

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BEAVER-ADVANCE Corporation, Ellwood City, Pa.

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a cinch to

Tyton Joint pipe is *quite* as easy to install as our hillbilly friend indicates. Only one accessory needed ...a specially designed rubber gasket that fits into the bell of the receiving pipe. A push or two and the connecting pipe compresses the gasket... seals the joint bottle-tight and permanently.

No bell holes. No waiting for weather. "Tyton" can be laid in rain or wet trench. It's so simple, in fact, even an inexperienced crew quickly becomes expert.

U.S. cast iron **PIPE** FOR WATER, SEWERAGE AND

install!

You'll be hearing more about this ingenious new Tyton Joint. Why not get the facts firsthand...and now?

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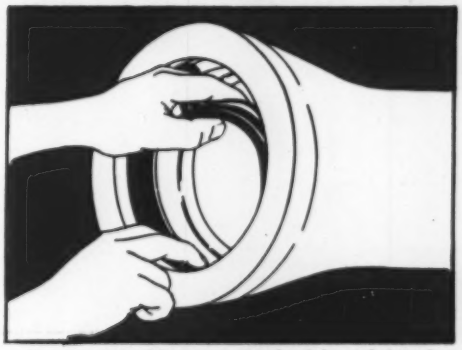
U. S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

A WHOLLY INTEGRATED PRODUCER FROM MINES AND BLAST FURNACES TO FINISHED PIPE

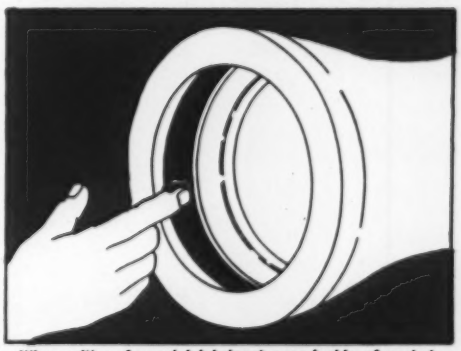
INDUSTRIAL SERVICE CAST IRON

U. S. TYTON JOINT

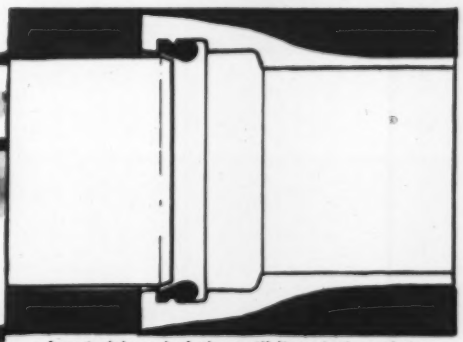
ONLY FOUR SIMPLE ACTIONS



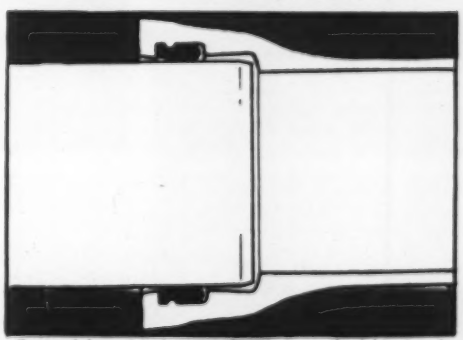
Insert gasket with groove over bead in gasket seat



Wipe a film of special lubricant over inside of gasket



Insert plain end of pipe until it contacts gasket



Force plain end to bottom of socket . . . the job's done!

NEW PROPANE
6000 C.P.
FLOODLIGHT

50-150 hours light on 20 lb. tank of Propane.

Safe, totally weatherized, completely portable.

Adjustable volume of light.

Throws beam about 100 x 250.

Lights instantly with match in −45° temperatures.

Also available on 4 to 8 ft. telescopic stand.

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Worked Too Fast

Dambuilder files claim in hurry and wait case

A dam builder who completed work ahead of time is filing a claim for more than $1 million because the government did not appreciate the contractor's speed.

Testimony has been taken by a commissioner in the U. S. Court of Claims on a $1,144,535 claim by Western Contracting Corp., of Sioux City, in connection with a contract at the Army Engineers' Fort Randall Dam near Pickstown, S. D.

The claim revolves around the closure date of the now completed Missouri River Dam.

Western contended it was ready to make closure in 1951 but was not permitted by Army Engineers to do so until 1952. This cost the company money in idle equipment and manpower, according to the claim.

Army Engineers said that the 1952 closure date was specified in Western's $7,208,896 Stage 3 earthwork contract. Western countered that by custom and usage, 1952 was the completion date of the contract and that it was the firm's option to do the work earlier if it desired to do so.

The hearing, which took two weeks of testimony, was held at Sioux City and Omaha. Testimony was taken by Commissioner W. Ney Evans of Washington, D. C., who will file his report and recommendation to the five judges of the Court of Claims. A ruling is expected to be handed down in about eight months.

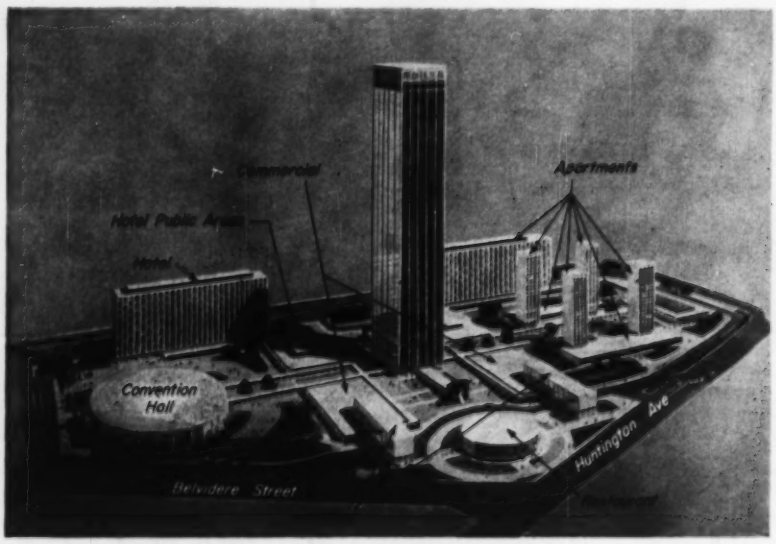
Treasury Opposes Bigger VA Direct Home Loan Plan

It would be "definitely inflationary" for the government to expand its program of direct home loans to veterans, W. Randolph Burgess, under-secretary of the Treasury, told a Congressional committee last week.

Burgess told the group that an increase in interest rates on veterans' mortgages is necessary to make the program work. The present interest rate is 4½%, the President has asked that it be raised to 5%.

The Administration is opposed to suggestions that funds in the veterans' life insurance program be invested in mortgages, Burgess said. These funds now are invested in government securities and to use them to buy guaranteed mortgages would require the Treasury to redeem present investments and raise an equivalent amount of cash through market borrowing.

He also opposed any concessions to the homebuilding industry that would attract investors for mortgages guaranteed by the Veterans' Administration.



Prudential Maps $100 Million Boston Center

Prudential Insurance Company's proposed 50-story office building will be part of an overall $100 million redevelopment in the Back Bay section of Boston. General layout of the project was unveiled last week; the plan itself had been announced earlier (ENR Jan. 31, p. 75) when final agreement was reached on land acquisition.

Lake View Sand and Gravel Company
Fond du Lac, Wisconsin

Trucks Run 100,000 Miles Before Overhaul with Cities Service C-300 Motor Oil!

CHART SHOWS LAKE VIEW'S 13-YEAR SAFETY RECORD

"Cities Service helped keep machinery in safest operating condition," says Manager Eugene Clement.

	SAFETY			
Year	Construction 1st Place	Group Awards 2nd Place	Building Supply 1st Place	Group Awards 2nd Place
1943			X	
1944	X		X	
1945	X		X	
1946	X		X	
1947	X			
1948		X		X
1949	X			X
1950	X		X	
1951				X
1952			X	
1953				X
1954				X
1955		X	X	

NOTE: Lake View also received a "No Accident Award" for years, 1945, '47.

Lake View Sand and Gravel also chalks up phenomenal 13-year safety record.

At Lake View Sand and Gravel Company, dump trucks run almost as much while standing as while moving.

"So you can see," says Manager Eugene Clement, "that the 100,000 mile overhaul period we're getting with Cities Service C-300 Motor Oil is really something!

"It's actually twice our former mileage with another brand of motor oil! And it certainly hasn't affected our safety record. For 13 years we've won Wisconsin safety awards—and we couldn't possibly have done it without top-notch maintenance and top-notch lubricants.

"Trojan H-2 Multi-Purpose Grease is an example of good, simplified lubrication. We use it for wheel bearings, water pumps and general chassis lubrication and find it not only offers greater water resistance, but also pumps easier in low temperatures. It's advantages like this that make me mighty glad I switched to Cities Service."

This is another report of a firm's outstanding results with Cities Service products. Find out what these products can do for you. Talk with your Cities Service representative or write: Cities Service Oil Co., Sixty Wall Tower, New York 5, N. Y.

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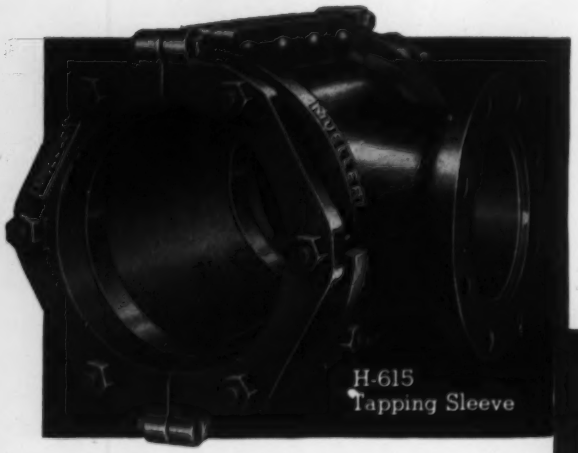

H-615
Tapping Sleeve

H-667
Tapping Valve

Mueller Tapping Sleeves and Valves are the most practical—and economical—means of connecting lateral or branch mains. Connections are made and lateral is put in service under pressure with a Mueller "CC" or "C-1" Drilling Machine—no shutdown, no loss of water, no interruption of flow in main!

Heavy duty construction and extra length of mechanical joint tapping sleeve assures maximum rigidity and strength. One mechanical joint sleeve of a nominal size will fit all classes of cast iron pipe regularly used by using only two sets of gaskets. Main sizes from 4″ through 12″ with various combinations of outlet sizes 2″ through 12″ are available.

Special mechanical joint tapping valve has oversize waterway—allows full-size cut for maximum flow. Exclusive four-point disc wedging mechanism assures tight shutoff and trouble-free operation. Available with "O" rings or conventional packing in sizes 2″ through 12″.

Tapping Crosses, Split Repair Sleeves and Cut In Sleeves and Valves are also available with mechanical joints.

Calked type tapping sleeves are available which will fit all classes of pipe for mains 3″ through 36″ with various combinations of outlets 2″ through 16″. Calked type tapping valves are available with "O" ring or conventional packing or flanged type for post indicator, with conventional packing only—sizes 2″ through 16″.

Consult your Mueller Representative, Catalog W-96 or write direct for full details.

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100th YEAR — SERVING the Water and Gas Industries

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AFL-CIO leaders concluded Miami meetings with . . .

A New Approach to Craft Union Dispute

The AFL-CIO Executive Council wound up its annual mid-winter meeting in Miami, Fla., last Wednesday with the jurisdictional dispute between the building trades and industrial unions still unsettled.

But characteristic of the strength of the merger as well as of the leadership of AFL-CIO President George Meany, a hopeful and conciliatory atmosphere emerged in the waning hours of the council session, abruptly reversing a developing feud between the Building and Construction Trades and Industrial Union Departments. That conflict had culminated a short time earlier in a "declaration of war" by the craft unions against the rival industrial groups (ENR Feb. 7, p. 136).

Although nothing substantive came out of the conferences, the newly-enlarged, 13-man Executive Council subcommittee—headed by Meany—developed the first trend towards a solution. It began with a pledge by the United Auto Workers' Walter Reuther, former head of the CIO, that the industrial unions would concede all new construction to the buildings trades. In turn, Reuther's group was informally assured the right to maintenance work, while those disputes in the shady area of renovation and attachment were considered for solution on the basis of past practice in an area. The committee plans to meet again in Washington D. C., on Feb. 25.

At the same time, in another effort to restore harmony, it was agreed that a special three-man committee, also headed by Meany, would meet in Akron, Ohio, Feb. 18 in an effort to end a costly boycott through which sheet metal workers have refused to install equipment produced by steel workers at the Burt Manufacturing Co. plant.

• **Doubts**—Following the final Miami meeting of the jurisdictional committee, both Meany and Reuther expressed optimism that a solution to the building trades-industrial union dispute appeared to be in sight. To some labor leaders this sounded like wishful thinking and they expressed doubt that a solution—if conceived and accepted—would immediately end the friction that exists.

Still holding out against any concessions to the Reuther bloc is the AFL-CIO's biggest union—the International Brotherhood of Teamsters, whose President Dave Beck last week turned up in Nassau just as the new Senate investigations subcommittee headed by Sen. John McClellan was readying itself to continue the probe of labor racketeering.

Led by teamster Ninth Vice President James R. Hoffa, the truck union was outspokenly wary of any moves that might limit its jurisdiction, or that of other craft unions.

Hoffa, who led the building trades into heated opposition to an earlier peacemaking plan submitted by Meany, directed the teamsters' moves throughout the sessions. Taking over the reins in Beck's absence, the energetic leader of the Central States teamsters—who are not represented on the special 13-man AFL-CIO subcommittee—warned that the teamsters would never relinquish jobs in their jurisdiction and would fight to regain territory held by industrial unions.

And the conflict is intensifying, says Hoffa, with automated equipment displacing truck drivers and production workers. Layoffs are becoming more of a headache and the unions are pushing contracts that will assure their members any type of work during a slack period rather than having it go to a rival union.

Apparently still out the window is Meany's plan to arbitrate jurisdictional disputes—flatly rejected by the buildings trades. While no concrete alternative has been suggested, the change in atmosphere that Meany achieved has put the squeeze on the teamsters, because even the most moderate compromise would, in essence, be a rejection of the teamster stand.

But despite the series of tactical defeats suffered by the teamsters in the council sessions, the union's influence on the firing line is in no sense diminished. With Hoffa leading the way, the teamsters will be pushing their own jurisdictional lines no matter whom they snag.

• **Problems**—Principle task of the peace committee is that of untangling the fuzzy areas where no clear-cut line exists between new construction and maintenance work in industrial plants.

Take, as an example, the Oil, Chemical and Atomic Workers Union—one of the old CIO unions against whom the building trades make the loudest complaint. In oil bargaining, the union pushes use of contract clauses that provide no-contracting-out bars on maintenance work and minor renovations. But the union also insists, where new construction is to be attached, that the oil workers do the attaching as a safety measure. And, in addition, when oil union members are idle, the union takes the position that work should not be given to outside contractors.

Union officials say they have no desire to do major construction and that installation of a new turbine, for instance, should be done by craft union members instead of oil workers. But when it comes to renovation, unless a major section of a plant building instead of just one part of a production operation is being altered, the work would fall within the oil union's jurisdiction.

The building trades, in turn, argue that these are encroachments on their traditional territory. They claim all major renovation, such as the complete overhauling of a plant, and object to any inroads on new construction, no matter how small.

Fanning these jurisdictional troubles, in which the question of definition plays a key role, are changes in production and construction methods, which not only change the jurisdictional lines established by past practice, but also frequently cut down the number of jobs available for either construction or production workers.

• **Committee**—Added last week to the AFL-CIO committee that will meet again this month to continue the search for a solution were Peter T. Schoemann (plumbers), John H. Lyons (iron workers), O. A. Knight (oil workers), Al J. Hayes (machinists) and Joseph Bierne (communications workers).

Original members were Meany, William Schnitzler (AFL-CIO secretary-treasurer), Harry Bates (bricklayers), Maurice Hutcheson (carpenters), Joseph Kennan (electrical workers), David McDonald (steel workers) and Leland Buckmaster (rubber workers).

Schoemann, incidentally, is a member of the joint committee of the Building Trades and Industrial Union Departments, which has wrestled unsuccessfully with the problem, and also

is serving on the three-man committee planning the building trades' reorganization. And Bierne is serving simultaneously on the Burt boycott committee.

• **Prospects**—Despite the easing of tensions that occurred last week, the face-lifting plans of the Building and Constructioon Trades Department are still in the works.

The overhaul—pushed by Hoffa to make the department a more effective opponent of the Industrial Union Department—embraces the streamlining of the department's structure, the setting up of organizing and public relations committees and the appointment of committees to handle particular areas of jurisdiction.

Hoffa's hope is to see the department reoriented along teamster union lines, where power is centralized at regional rather than local levels.

The lessening of hostility between the two departments, however, caused a collapse in the building trades' threat to secede from the Industrial Union Department, which 10 of the trades had joined at the time of the merger. The only union to step in this direction was the teamsters. It cut its IUD membership from 400,000 to 25,000. And the fact that the others refused to go along with this limited resistance again emphasized the slight gap that developed between the teamsters and the Building and Construction Trades Department.

But the biggest significance of this cleavage in attitude is its reflection of the building trades' conviction that the merger will eventually pay off. Even when the jurisdictional dispute was at its peak, the building trades didn't consider bolting the federation. General feeling is that the merger still provides the best means, not only for settling issues at the top level, but also for promoting harmony among unions at the local level. However stormy or slow the road ahead may be, union delegates left Miami with a feeling of optimism.

Contractors Enter Wage-Price Dispute

Last week, the AFL-CIO, President Eisenhower and a host of others, including New Jersey building contractors, sparked new interest in the significance of wage and price policies to the economic health of the nation.

Concluding its mid-winter meeting in Miami, Fla., the AFL-CIO Executive Council asked Congress to investigate the economics of inflation, contending that high prices rather than high wages is the mainspring of inflation. During the last several months, Walter Reuther, president of the auto workers union has asked for such an investigation. "We have been seeking a Congressional investigation," he said, "to establish on a factual basis, where the fault really lies so that the innocent will not be condemned for the sins of the guilty."

The AFL-CIO Executive Council statement urged that the American public "be made aware of the fact that price rises for major goods have far outstripped wage boosts." And the federation, which has consistently contended that wage increases should improve as well as protect the workers' standard of living, asserted that increases in productivity should not be imposed as a ceiling on wage boosts.

Shortly afterwards, President Eisenhower, at his news conference in Washington, said that unless business and labor, in setting wages and prices, discharge their responsibilities in the best interest of the nation, the United States would have "to move in more firmly." Secretary of Commerce Weeks immediately gave an assurance that the Administration has "no disposition" to impose wage and price "controls."

Management's voice was quick to be heard. The Building Contractors Association of New Jersey again urged building trades unions in the state to adopt an immediate and voluntary temporary freeze on wages and fringe benefits. Noting that the construction industry is already faced with increased wage demands from 25 cents to 60 cents per hour by building crafts in various areas of the state on present contracts that will come up for renegotiation between April and June of this year, an association spokesman said: "We are at the crossroads and self regulation at this time will prove that labor and management in our industry are working in the public interest." An 18 month wage freeze, on a cooperative labor-management basis, had been recommended last year by the association's managing director, Paul Brienza.

With the same objective in mind, the head of the National Association of Manufacturers last week declared that "the wage-price spiral must be stopped in the long-range interest of labor, management and the American people." At the same time, he challenged the validity of the AFL-CIO's contentions by asserting that wage boosts which outrun increases in productivity will lead to a depression.

OFFICIAL PROPOSALS

Bids: March 19, 1957

Contract PN-340.007

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS NOS. 290, 291, 292 AND WHARF BUILDINGS

Sealed proposals for the construction of one, two or three transit sheds (Buildings Nos. 290, 291 and 292) on the North side of the City Channel at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 19, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, February 14, 1957

Bids: March 19, 1957

Contract PN-340.008

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PORT NEWARK
BUILDINGS NOS. 290, 291, 292 AND WHARF
PAVING AND UTILITIES

Sealed proposals for the construction of pavements and utilities for the three transit sheds (Buildings Nos. 290, 291 and 292) on the North side of the City Channel at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 19, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, February 14, 1957

U. S. Government

Department of Commerce, Bureau of Public Roads, February 5, 1957. SEALED BIDS will be received at the office of the Regional Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., MARCH 7, 1957, for Project 1A2,1A3,1A4, George Washington Memorial Parkway, Arlington County, Virginia. Piers and superstructures for 3 viaducts. The approximate quantities of the more important items are about 5,000 cu. yd. concrete, 900,000 lb. Reinforcing Steel, and 1,900 tons Structural Steel. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above. H. J. Spelman, Regional Engineer.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, P.O. Box 12, New York 36, N. Y.

Bids: February 28, 1957

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Canal Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 28th day of February 1957, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, N. Y.						
Greene & Rensselaer	WS-R 57-1	Truck Weighing Stations No. 17 (S.H. 5094) and No. 11 (S.H.8384)	0.04	9" Cem. Conc. Pavt. 12' Wide 12' Wide	$235 Plans $10	4,300
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee St., Utica 1, N. Y.						
Madison (Rte. 46)	FASH 57-4 FARC 57-14	City of Oneida: South Highway Conn. Oneida-Munnsville, Pt. 1, S.H. 1160 Project U-691(5)	1.81	Asph. Conc. Ty. 1A	$26,000 Plans $15	470,000
DISTRICT No. 3, W. ROBINSON, District Engineer, WeightLock Building, Syracuse, N. Y.						
Onondaga	F.C. 57-2	City of Syracuse: Van Duyn School Bridge	0.04	Pedestrian Overpass 5' Wide, 3 Spans 122'	$1,400 Plans $10	27,000
Onondaga (Rte. 5)	FARC 57-9	Fayetteville Village: Genesee Street, S.H. 5660 Project F-329(7)	0.25 0.11 Int.)	9" Cem. Conc. Pavt. 57' Wide = 0.12 Mi. Asp. Conc. Ty. 1A = 0.24 Mi. Comp. I-Beam Br. 260.5'	$24,000 Plans $10	434,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, N. Y.						
Genesee	WS-R 57-4	Truck Weighing Station No. 9 (S.H. 8431) and No. 41(S.H. 8215)	0.04	10" Unreinf. Cem. Conc. Pave. 12' Wide	$350 Plans $10	6,300
Monroe (Rte. 251 & 253)	RC 57-16	Scottsville-West Henrietta, S.H. 1499-A Scottsville-Rush, S.H. 1393-A	0.13	Asph. Conc. Opt. = 0.02Mi. Asp. Conc. Ty. 2B = 0.05 Mi. Misc. Work = 0.06 Mi. Repair & Paint Existing 235.3' Truss	$4,300 Plans $10	79,000
Monroe	M 57-4	City of Rochester: Genesee Valley Park Br. E-151	....	Rehabilitation of South Guide Wall With Two Steel Sheet Pile Cells	$900 Plans $10	16,361.10
DISTRICT No. 5, E. G. H. YOUNGMANS, District Engineer, State Office Bldg., 65 Court St., Buffalo 2, N. Y.						
Cattaraugus	ASP 57-1	Scenic Road: Allegany State Park	5.00	Asp. Conc. Opt. = 4.98 Mi. Misc. Work = 0.02 Mi.	$17,000 Plans $10	313,000
Chautauqua	FASS 57-1	Hunt Road, Co. Rd. 82 Project S-465(1)	4.26	Asp. Conc., Opt.	$35,000 Plans $15	618,000
Erie	FINTC 57-1	New York State Thruway-Niagara Section-Sub. N3 (Peabody St. to Louisiana St.) Project I-865(14)	1.24	9" Cem. Conc. Pavt. 2 at 37' Var. Wide = 1.17 Mi. Misc. Work = 0.07 Mi. 1 RR Sep. Comp. Girder 576' 2 RR Seps. Comp. I-Beams 173.3' and 255.1 3 Hy. Seps. Comp. I-Beams 160.5', 131' and 152.8'	$354,000 Plans $100	6,442,000
Erie	FINTC 57-11 PSC 9058	New York State Thruway-Niagara Section, Sub. N5; Elim. of the Grade Crossing of the New York Central Railroad and Porter Avenue: City of Buffalo Proj. I-865(13)	1.92 (0.92 Acc.)	R.R. Relocation = 1.25 Mi.; 9" Cem. Conc. Pavt. Var. Wide = 0.77 Mi.; Asp. Conc. Opt. = 0.59 Mi.; Misc. Work = 0.23 Mi.; RR & Hy. Sep Comp. I-Beam, 192.5'; Ramp Comp. I-Beam, 223'.	$86,000 Plans $25	$1,586,000
DISTRICT No. 6, J. H. THOMAS, District Engineer, State Office Bldg., 30 W. Main St., Hornell, N. Y.						
Tioga, Allegany & Steuben	WS-R 57-6	Truck Weighing Stations No. 27 (S.H. 5168), No. 28 (S.H. 8253) and No. 35 (S.H. 5211)	0.06	9" Cem. Conc. Pavt. 12' Wide	$600 Plans $10	11,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
Jefferson	WS-R 57-7	Truck Weighing Station No. 31 (S.H. 5119)	0.04	9" Cem. Conc. Pavt.	$650 Plans $10	12,300
Jefferson (Rte. 11)	FARC 57-12	Philadelphia-Antwerp, S.H. 5548 Project F-476(5)	1.02	Asp. Conc. Opt. Comp. I-Beam Br. 168'	$30,000 Plans $15	545,000
St. Lawrence	FASS 57-2	De Kalb Junction-Rensselaer Falls (Town Road) Project S-479(1)	5.94	Bit. Mulch-Graded Gravel Prestressed Precast Conc. Br. 100'	$32,000 Plans $25	580,000
St. Lawrence (Rte. 37B)	FASSH 57-5	Village of Massena: Center St.-Parker St. Bridge and Interchange Project Us-467(1)	0.64 (0.60 Acc.)	Asp. Conc. Opt. Comp. Weld. Plate Gird. Bridge 840'	$150,000 Plans $25	2,750,000
DISTRICT No. 8, K. G. RAUER, District Engineer (Acting), Pleasant Valley Road, Poughkeepsie, N. Y.						
Dutchess, Orange, Ulster	WS-R 57-8	Truck Weighing Stations No. 2 (S.H. 5719), No. 12 (S.H. 231), No. 15 (S.H. 5150) and No. 25 (S.H. 5210)	0.08	9" Cem. Conc. Pavt. 12' Wide	$750 Plans $10	13,000
Westchester (Rte. 127)	FARC 57-17	Lake Street, Ridge Street and Harrison Avenue S.H. 1457 White Plains Town Line-Harrison, S.H. 780 Project S-468(1)	0.96	9" Cem. Conc. Pavt. 40' Var. Wide = 0.95 Mi. Misc. Work = 0.01 Mi.	$26,000 Plans $10	502,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main St., Babylon, L. I., New York						
Suffolk (Rte. 25)	FARC 57-20	Riverhead-Mattituck, Pts. 1 and 3, S.H. 8181, Mattituck-Greenport, Pts. 1 and 3, S.H. 8229	2.26	Asp. Conc. Opt. = 2.01 Mi. Misc. Work = 0.25 Mi.	$28,000 Plans $15	507,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: March 30, 1957

Board of Management for the Port of Rangoon

Tenders for supply of Mechanical Handling Equipment

1. The Board of Management for the Port of Rangoon invites tenders for the supply of the undermentioned Mechanical Handling Equipment:—

(a) Porter's Trucks.
(b) Platform Trailers of various load capacities.
(c) Tractors.
(d) Heavy Duty Diesel Industrial Tractors.
(e) Fork Lift Trucks of various types.
(f) Mobile Cranes of various lift capacities.
(g) Crane Weighing Scales.
(h) Aluminum Dockside Articulated Gangways of various sizes.
(i) Gate Pass Issuing and Cancelling Machines.

2. Tender documents consisting of detailed Specifications of Equipment desired, Instructions to Tenderers, Form of Tender, Schedule, General and Special Provisions of Contract and Form of Contract may be obtained from the office of the undersigned on payment of K 25 per set; or from Ogilvy Gillanders and Co., Ltd., King William House, 2a Eastcheap, London E.C. 3, on payment of £2 per set; or from Messrs. Tippetts-Abbett-McCarthy and Stratton Engineers, 62 West 47th Street, New York 36, N. Y. on payment of U. S. $5.00 per set.

3. Tenders must be submitted on the Board's Tender Form available as mentioned in paragraph 2 above, in sealed envelopes addressed to—

The Chairman,
Board of Management for the
Port of Rangoon,
Post Box No. 1,
Rangoon, Burma

and marked "Tender for supply of Mechanical Handling Equipment". All tenders should reach the office of the undersigned not later than 12 noon on 30th March 1957 or posted to the above mentioned address sufficiently early to reach on or before the appointed time and date.

4. The Board does not bind itself to accept the lowest or any tender or to assign any reasons for rejection of any tender.

WIN PE
CHAIRMAN

Bids: February 26, 1957

Power Authority of the State of New York

BARNHART-PLATTSBURGH
TRANSMISSION PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF
TRANSMISSION LINE CONDUCTORS
SPECIFICATION NO. PA-6-16
CONTRACT NO. TP3

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture, and furnishing of transmission line conductors for the Barnhart-Plattsburgh Transmision Project and delivery thereof f.o.b. destinations, until 10:30 A. M., Eastern Standard Time, on the 26th day of February, 1957, at the Authority's office, 270 Broadway, Room 1305, New York, New York, at which time and place the proposals will be publicly opened and read aloud.

Bids will be received on aluminum conductor steel reinforced (ACSR) cable for the transmission lines in accordance with the bidding schedule. Conductors will be installed by Others. Delivery of conductors will be required starting September 1, 1957. The estimated quantities are:

218 miles—795,000 cm, 26/7 stranding
21 miles—954,000 cm, 54/7 stranding
21 miles—No. 2/0 AWG, 6/1 stranding
11 miles—477,000 cm, 26/7 stranding
16,500 feet—804,500 cm, 38/19 stranding

Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours; and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) Dollars per initial set of contract documents and Five ($5.00) Dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate in accordance with the instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than ten percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: March 8, 1957

Refuse Disposal Plant

ADVERTISEMENT FOR BIDS
VILLAGE OF SCARSDALE
WESTCHESTER COUNTY, NEW YORK
NOTICE TO CONTRACTORS

Sealed bids for the construction of one of two types of Refuse Disposal Plant, (A, using circular furnaces; B, using rectangular furnaces) for the Village of Scarsdale in the County of Westchester, New York will be received by the Board of Trustees, Village Hall, Scarsdale, New York until four o'clock P. M. EST March 8, 1957 and will be publicly opened and read at a meeting of the Board that afternoon.

The Plans and Specifications cover two entirely separate and distinct Projects for a Refuse Disposal Plant one designated "Project A", using circular furnaces and the other designated "Project B", using rectangular furnaces, each with all accessories, and include the Plant Building, Furnaces and their Equipment, Chimney, Settling Basin, Access Road, Plumbing, Heating and Ventilating, Electric Work, Landscaping and other miscellaneous items of work. Each Project has been divided into various Contracts, permitting separated bids by different trades.

The Information for Bidders, Form of Bid, Form of Contract, Form of Performance Bond, together with the Specifications and Contract Drawings, may be examined at the office of the Principal Engineer in the Village Hall, Scarsdale, New York or at the office of the Consulting Engineer, Henry W. Taylor, 151 West Merrick Road, Freeport, New York

Copies thereof can be obtained upon the deposit of $25.00 for each set. The full deposit will be returned to any person submitting a bid in accordance herewith and returning one copy of the Plans and Specifications in good condition within thirty (30) days following the award of contract or the rejection of the bid of such person; a refund of $10.00 will be made for any other sets of Plans and Specifications returned in good condition and within thirty (30) days after the award of contract or rejection of such Plans.

Checks for payment on the Plans shall be made payable to the Village of Scarsdale, New York.

Each bidder must deposit with his bid certified check or cash in an amount not less than five per cent (5%) of the amount of his bid. Any bidder submitting bids on corresponding Contracts for both Projects shall make one deposit based on the larger of the two bids. The successful bidder will be required to post a bond in form satisfactory to the Board of Trustees in the full amount of the Contract. Should said successful bidder fail to execute the Contract and post the required performance bond within seven days after notice of award, the check or cash will be forfeited to the Village of Scarsdale. Checks or cash of unsuccessful bidders may be held until the contract award is approved or all bids rejected, after which they will be returned within three days.

The Board of Trustees reserves the right to waive any informalities in any bid and to reject any or all bids for either or both Projects. If the Board decides to award contracts under either Project it may accept all bids made under such Project and will reject any bids made under the other.

No bidder may withdraw his bid after acceptance thereof by the Village of Scarsdale or within thirty (30) days after the actual opening thereof.

Reeves Newsom
Village Manager

Dated February 14, 1957

Bids: March 7, 1957

Power Authority of the State of New York

BARNHART-PLATTSBURGH
TRANSMISSION PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF
TRANSMISSION LINE TOWERS
SPECIFICATIONS NO. PA-6-21
CONTRACT NO. TP2

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive seale proposals for the design, manufacture, and furnishing of transmission line towers for the Barnhart-Plattsburgh Transmission Project and delivery thereof f.o.b. destinations, until 10:30 A.M., Eastern Standard Time, on the 7th day of March, 1957 at the Authority's office, Room 1305, 270 Broadway, New York, at which time and place the proposals will be publicly opened and read aloud.

Bids will be entertained for seven (7) transmission line towers and services in accordance with the bidding schedule. Erection at the site of installation will be done by Others, but services of erection engineers shall be provided by the manufacturer, if and when required. Delivery will be required starting September 15, 1957.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts; may be inspected by prospective bidders during office hours; and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) Dollars per initial set of contract documents and Five ($5.00) Dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate in accordance with the instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than ten percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

U. S. Government

United States Department of Commerce, Bureau of Public Roads, February 8, 1957. Sealed bids will be received at the Inter-American Highway Office, Bureau of Public Roads, Room 4009, General Services Administration Building, Washington 25, D. C. until 2 p.m., E.S.T., February 28, 1957 for the construction of Nicaragua project 8-A on the Inter-American Highway in Nicaragua, consisting of grading, drainage, selected borrow base and other work. The project begins at Sebaco about 60 miles north of Managua and extends north for about 48 miles to Condega. The approximate quantities of the major items of work are: 1,288,000 cubic meters Unclassified Excavation, 590,000 cubic meters Borrow Excavation, 186,000 cubic meters Selected Borrow Base Course, 3100 cubic yards Class A Concrete in Box Culverts, 365,000 lbs. Reinforcing Steel, 15,000 linear feet Nestable, Bituminous Coated Corrugated Metal Culvert Pipe (from 24" to 72"). Bids will be accepted only from United States or Nicaragua firms with a satisfactory record of performance on highway construction in the United States or in Nicaragua. The need for progress payments, where progress payments may legally be made, will not be treated as a handicap in awarding a contract. Plans, Specifications, and Proposal Forms are available upon request from the address given above, or at the Inter-American Highway District Office, Bureau of Public Roads, No. 203 Carlos Palazio Bldg., Calle 5a N.W., Managua, Nicaragua. This is a readvertisement with alternate bids optional. C. D. Curtiss, Commissioner of Public Roads.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4845) will be received at Huron, South Dakota, until March 26, 1957, for furnishing labor and materials for constructing foundations and furnishing and erecting steel towers for Fargo-Granite Falls 230-Kilovolt Transmission Line, Missouri River Basin Project, North Dakota-Minnesota. Location in Cass County, North Dakota; and Clay, Wilkin, Ottertail, Grant, Stevens, Swift and Chippewa Counties, Minnesota. Principal items are furnishing 135,000 lin. ft. treated timber piles from 30 feet to 65 feet in length; furnishing and handling 11,300 barrels cement; furnishing and placing 714,000 lbs. reinforcement bars; furnishing 771 tower bodies of various types and heights; erecting 771 tower bodies of various types and heights; furnishing 1,250,000 lbs. tower leg extensions; and other work. Completion time 850 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 1993, Fargo, North Dakota; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: March 12, 1957

Contract BP-120.006

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
PIER 11
MAINTENANCE AND SERVICE GARAGE

Sealed proposals for the construction of a maintenance and service garage together with paving and utilities therefor, at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 12, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, February 14, 1957

Read This Before You Award That Contract!

For over 80 years, awarding authorities, both public and private, have used EN-R's OFFICIAL PROPOSALS section for announcing their call for bids. They have found EN-R increases the response from well equipped, financially dependable construction firms . . . and often results in a saving of many thousands of dollars for the awarding authority.

When the awarding authority requires prequalification of contractors, the high calibre readership of EN-R offers a valuable source from which to attract names for its list.

Your call for bids in the OFFICIAL PROPOSALS section of EN-R will bring the advantages of careful local bidding and keen sectional and national competition for the job. In addition, advertising for bids in EN-R makes the awarding of the contract a matter of undisputable record.

A streamlined production schedule enables us to accept Official Proposals advertising until the first mail on Friday for inclusion in the issue to be mailed the following Tuesday. Advertisements are to be sent to the attention of

"Classified Advertising Division".

ENGINEERING NEWS-RECORD
P. O. Box 12
New York 36, N. Y.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4844) will be received at Huron, South Dakota, until March 26, 1957, for furnishing labor and materials for constructing foundations and furnishing and erecting steel towers for Utica Junction-Sioux Falls 230-Kilovolt Transmission Line, Missouri River Basin Project, South Dakota. Location in Yankton, Turner, Lincoln, and Minnehaha counties, South Dakota. Principal items are furnishing 10,000 lin. ft. treated timber piles, from 30 feet to 65 feet in length; furnishing and handling 3,800 barrels cement; furnishing and placing 256,000 lbs. reinforcement bars; furnishing 313 tower bodies of various types and heights; erecting 313 tower bodies of various types and heights; furnishing 687,500 lbs. tower leg extensions; and other work. Completion time 515 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: March 7, 1957

Township of O'Hara

OFFICIAL NOTICE
SEALED BIDS

Sealed bids will be received by the Township of O'Hara, at the office of the Secretary of the Township, 121 Valley Drive, Pittsburgh 15, Pa., until 7:00 P.M., E.S.T., March 7th, 1957, for the sale of and removal of an undetermined number of tons of blast furnace slag, estimated to be 2,000,000 tons, more or less, located on property of the Township of O'Hara. Bids should be submitted on a price per ton.

Bidders may make arrangements to examine the slag pile, obtain directions concerning its location and obtain copies of the instructions for bidding and proposed contract from the Township Secretary, Robert J. Herpel, 121 Valley Drive, Pittsburgh 15, Pa., telephone: ST 1-0660.

Bids will be publicly opened and read by the Board of Commissioners, or a committee thereof, at 8:00 P.M. on March 7th, at the Pleasant Valley Fire House, Kittanning Pike.

The Township reserves the right to reject any and all bids.

ROBERT J. HERPEL
Secretary
Township of O'Hara

EMPLOYMENT OPPORTUNITIES

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36).
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Civil Engineer-Estimator: for industrial construction. Approximately 10-15 years of both estimating and job experience. Salary open, position permanent. Located in Florida. P-3632, Engineering News-Record.

Civil Engineers for design and construction of municipal and industrial sewerage, treatment and water supply projects. Old established consulting firm in Midwest has openings in permanent staff. Please send full information and references. P-3899, Engineering News-Record.

Soils Engineer—prefer man with MS in soils about 1945 or 1946—to head up a design group in a firm of consulting engineers specializing in design of dams. Must be top-notch design engineer and supervisor. Salary open. Location Midwest. P-3942, Engineering News-Record.

Bridge Designers and Draftsmen with experience for permanent positions. Forward full educational, employment and personal data with salary requirements. Macomber & Faber, 1824 North Fourth Street, Harrisburg, Pennsylvania.

Engineer capable of layout and takeoff for Western New York Paving contractor. Reply P-4154, Engineering News-Record.

Superintendent for Western New York paving and excavating contractor. Reply P-4155, Engineering News-Record.

Graduate Civil Engineers not over 30 and preferably single. Must have military training completed and interested in the building construction business, starting in the field. We offer opportunity for rapid advancement to ambitious, hard-working young men willing to accept responsibility. Starting salary $110.00 per week if inexperienced with higher wages for those with some experience. Send complete history data. Martin K. Eby Construction Co., Inc., 610 N. Main, Wichita 5, Kansas.

Chief Draftsman—Experienced in design and detail of furnaces & mechanical equipment. Capable of organizing and supervising complete job through drafting room. Small organization, Midtown N. Y., permanent. P-4198, Engineering News-Record.

Wanted—Graduate Civil Engineers for work in New York State by long established engineering organization. Experience in highway and municipal fields or concrete structural design is necessary. Age 30 to 40. Give resume of education, engineering experience and salary requirement in reply. P-4254, Engineering News-Record.

POSITIONS VACANT

Land Surveyor with minimum of 5 years experience, for Chicago and vicinity; also Map Draftsman, capable of computing. Salary $6000 to $8000 per year. P-4224, Engineering News-Record.

Superintendent—Swimming pool construction. All phases gunite pool experience essential. Salary open. Westchester County. Reply Box 505, Bedford, N. Y.

Civil Engineer—building construction—Main office in southern Connecticut—quantity estimating, cost work, scheduling, etc. P-4232, Engineering News-Record.

Wanted—Young graduate architect or engineer interested in designing and assisting promotion use of machine made concrete block in prestressed beams and panels. Contact: P. M. Park, Besser Company, Alpena, Michigan.

Position Vacant—Field Superintendent for concrete bridge and dam construction. Please furnish complete education and experience data, references and salary desired. Reply to P-4282, Engineering News-Record.

Designers—Electrical and Piping . . . Power Plants and Industrial Buildings. Marbarry Corp., 120 Greenwich St., New York City 6, N. Y. REctor 2-3749.

Engineer—Structural Steel Sales Promotion we are searching for three young civil or architectural engineers, preferably under 30, to handle technical and promotional work for the structural steel fabricating industry. Applicants are sought for openings at Philadelphia, Pennsylvania; Chicago, Illinois; and Los Angeles, California. Some travel within the surrounding state's area is required. Applicants should have a B.S. in C.E., or A.E., and preferably should be registered. Experience in steel design and construction desirable. Salary open depending upon experience. Insurance and retirement plans available. Send complete resume, recent photo if available, and salary requirement by mail to American Institute of Steel Construction, Inc., 101 Park Avenue, New York 17, New York.

Highway Materials Engineers and Inspectors. Large commercial Inspection and Testing Agency desires to expand permanent personnel gradually during next several months. Openings will be in various areas, Continental United States. Submit age, education, experience, and salaries earned. All correspondence confidential. P-4274, Engineering News-Record.

Wanted—Experienced Designers on Highway Projects. Location central Ohio. Excellent opportunities for those who can qualify. Long range work program. Generous employee benefits. Reply stating qualifications, availability, and salary requirements. P-4264, Engineering News-Record.

(Continued on following page)

(Continued from preceding page)

EMPLOYMENT SERVICES

Salaried Positions $6,000 to $35,000. We offer the original personal employment service (established 46 years). Procedure of high standards individualized to your personal requirements. Identity covered. Particulars—R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo 3, N. Y.

Salaried personnel, $5,000-$30,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings. Dept. L. P. O. Box 674, Manchester, Vermont.

POSITIONS WANTED

Canadian Civil Engineer (McGill '26), specialized in municipal problems, seeks a permanent responsible position with a municipality or private concern, located in the Southern States. Excellent administrative, professional and personal background. Now employed as a free-lance municipal consultant. 54 years old. Member of the Corporation of Professional Engineers of Quebec. Full details on request. PW-4003, Engineering News-Record.

General Manager Executive. Heavy construction diversified foreign and domestic experience includes joint venture management of all phases (finance planning, engineering and construction supervision) dams, tunnels, shafts, airbases, railroads. Power Plants, Bridges etc. PW-4061, Engineering News-Record.

Sales Engineer: Experienced in specification work with architects and engineers and sales to utilities, contractors, industrials, etc. Well acquainted Eastern Pennsylvania, Southern New Jersey, Delaware and Maryland. Have serviceable car. PW-4064, Engineering News-Record.

Construction Supervisor (Mechanical) age 30 thoroughly experienced in the construction of steam heating, circ. hot water heating, sprinkler systems (wet & dry), pump houses, refrigeration, domestic plumbing etc. Desire a responsible position in Europe. Have completed two Foreign contracts. PW-3994, Engineering News-Record.

General Construction Manager or Superintendent—Practical background, bricklayer by trade. Operated own company thirty-five years. Past ten years grossed up to five million dollars per year—mostly hospitals, schools, and housing in five hundred thousand to one and a half million dollar jobs each. Dissolved company. Decided to retire but find it is boring. Fifty-seven years old, excellent health, married, three teen age children. Need lots of action yet. Would like position as Assistant to President or General Manager of construction company with plenty of problems. Salary open and dependent on responsibilities assumed. Able to furnish best of references. PW-4096, Engineering News-Record.

Chf. Estimator—B.C.E. 10 yrs. heavy construction bids, subs, payments, costs. P.E. license N. Y. and N. J. Prefer Metropolitan area. PW-4120, Engineering News-Record.

Surveying field parties, 3 or 4 men, fully equipped, well exp. in all types of work. Under licensed supervision. Willing to travel. PW-4122, Engineering News-Record.

Equipment Superintendent with experience and ability to handle large foreign jobs. Available March 1st. PW-4135, Engineering News-Record.

Registered Graduate Civil Engr. age 32. Diversified engineering background. Want employment with engr. or contracting firm with option to purchase in 1-3 years. Have capital to invest. PW-4141, Engineering News-Record.

Project Manager-Superintendent, heavy & bridge construction, 19 years experience, $200. PW-4152, Engineering News-Record.

Engineer Architect representative; General Superintendent or project manager experienced in Air Field, commercial buildings, industrial and chemical plant construction; also highway, grading and drainage. Available on short notice for assignment domestic or oversea's. PW-3983, Engineering News-Record.

General Superintendent with engineering background, age 54, desires steady employment with reliable firm. Prefer work in main office but not averse to accepting field assignments. Resume upon request. PW-4194, Engineering News-Record.

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

The Advertisements in this section include all employment opportunities—executive, management, technical selling, office, skilled, manual, etc.

Positions Vacant | **Civil Service Opportunities . . .** | **Employment Agencies**
Positions Wanted | **Selling Opportunities Wanted** | **Employment Services**
Part Time Work | **Selling Opportunities Offered** | **Labor Bureaus**

DISPLAYED ———**RATES**——— **UNDISPLAYED**

The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

$2.10 per line, minimum 3 lines. To figure payment count 5 average words as a line.
Position Wanted ads are ½ of above.
Box Numbers—counts as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Not subject to Agency Commission.

Send NEW ADS or inquiries to Classified Adv Div of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36, N. Y. February 28th Issue Closes February 15th

DESIGN ENGINEERS

ELECTRICAL & MECHANICAL

Attractive proposition for men who are available upon reasonable notice, have an engineering degree or the equivalent, and who have had from 4 to 8 yrs. exper. as an electrical or mechanical design engineer on construction projects.

OVERSEAS

Normally single status, but possibility of housing for wife. No children. Rush detailed resume indicating all pertinent information such as dates of previous employment, salaries, availability, etc.

P-4293, Engineering News-Record,
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

SUPERINTENDENT BUILDING CONSTRUCTION

Top flight man by growing company operating nationally. Give all pertinent data in reply including education, experience, salary, references and when available.

BLOUNT BROTHERS CONSTRUCTION CO.
P. O. Box 949 Montgomery, Ala.

POSITIONS WANTED

Private employment agency owner interested in recruitment position with expanding engineering company. Age 28, available now. Five years agency experience. Write PW-4211, Engineering News-Record.

Construction project manager, engineer. Wide experience all phases water-supply, bridge, tunnel, foundation, sanitation and heavy construction from initial planning to completion. Good organizer. Excellent background. Available soon for organizing, supervising construction projects for owners or operator. Registered civil. Age 56. PW-4271, Engineering News-Record.

Controller—Accountant. Top administrator all financial and accounting functions, income tax, insurance. 12 years engineering and construction plus 4 years public accounting experience. Work area N.Y.C. and vicinity. PW-4289, Engineering News-Record.

Engineer, one year to graduate, with over 12 years experience desires permanent position. Age 31, can go anywhere. Experience in design construction and supervision of highways and other pavements, utilidors, wharves and other structures. Management and estimating included. Proven ability, salary can be negotiated. Available immediately. PW-4286, Engineering News-Record.

Construction Engineer. 30. BCE, PE. 6 yrs. field exp. with heavy & industrial contractors. Desires Foreign position, single status, minimum $12,000. PW-4272, Engineering News-Record.

Bid More Jobs without increasing your overhead using freelance estimator takeoff heavy construction only located N. Y. PW-4270, Engineering News-Record.

Engineer . . . (Supervising)

For Water Supply Distribution and Purification System.
FOREIGN. Contract 2-3 years

BROWN & BLAUVELT
Consulting Engineers
468 - 4th Ave., New York, N. Y.
LE 2-7581

SUPERINTENDENT

To take charge of new plant located 75 miles from Chicago for large building materials company. Thorough knowledge of rotary kiln operations as applied to processing of expanded shale, cement, or burned lime, with minimum of five years supervisory experience in the field required.

Good salary, profit sharing, and other benefits.

Reply giving work history and personal background.

P-4287, Engineering News-Record,
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS WANTED

Civil Engineer—MSCE—Graduate training in hydraulics & fluid mechanics. Veteran. PW-4284, Engineering News-Record.

Construction Engineer—25 years experience negotiating, estimating and supervising industrial and public works construction for engineers, contractors and owners. PW-4225, Engineering News-Record.

Construction Supt. Liaison Engineer, 15 years exp. in chemical, aluminum, power-plants etc. process piping, instrumentation. Air conditioning plants from 1000-5000 tons. Will take domestic or European assignments. PW-4253, Engineering News-Record.

Construction executive, age 42, presently general manager all phases of highways. Desirous of organizing new company or your branch with highways and other optional operations in Louisiana and Arkansas. Only principals familiar with large scale business of this type please. PW-4252, Engineering News-Record.

Electrical Engineer: Thirty years experience. Principally field. Covers design, estimating, review of plans-specifications, construction and inspection. No recent board work. Married. No children. Free to travel. PW-4249, Engineering News-Record.

Building Construction Supt. Available for field supervision, for a reliable organization, **25 yrs. exp. on industrial, commercial, insti**tutional etc. Age 55, will travel. PW-4294, Engineering News-Record.

Supt. or Project Manager available for work in Florida or Georgia. Qualified and experience all phases. PW-3822. Engineering News-Record.

McKEE NEEDS

- Structural
- Concrete
- Piping
- Mechanical

ENGINEERS

Our Metals, Refinery and Industrial Divisions offer you wide choice of opportunity to make full use of your talents, with excellent prospects for promotion to supervisory, staff and executive posts.

Broad diversification of work in our three engineering divisions assures you *permanent* security of employment.

You can build a strong foundation for your future with McKee. For complete information on the McKee organization and the extra benefits this company offers you write for our folder "The Key to Your Future" or contact us by telephone.

Telephone TOwer 1-2300, Cleveland, Ohio
or write to Edward A. Kolner
Arthur G. McKee & Company
2300 Chester Ave., Cleveland 1, Ohio

Arthur G. McKee & Company
Engineering offices in
CLEVELAND, OHIO • UNION, N.J. • TORONTO, ONT.

BOWATERS
SOUTHERN PAPER CORPORATION
and
BOWATERS
RESEARCH AND DEVELOPMENT INCORPORATED

South's largest and newest newsprint and pulp mills now receiving applications for the following permanent positions:

DESIGN ENGINEERS
PIPING ENGINEERS
PULP MILL ENGINEERS
MILL AREA ENGINEERS

Located in Eastern Tennessee Valley. Excellent recreational, residential facilities. Exceedingly favorable year around climate, near Chattanooga and Knoxville, Tennessee. Complete insurance, retirement, salary, and vacation programs. All applications treated in confidence. Reply immediately submitting summary of experience to:

BOWATERS
SOUTHERN PAPER CORPORATION
Industrial Relations Department
Calhoun, Tennessee

HIGHWAY ENGINEERS
DESIGNERS
DETAILERS

FOR OFFICE WORK IN ST. LOUIS ON HIGHWAYS EXPRESSWAYS AND ASSOCIATED CIVIL WORKS

- Permanent employment for qualified men
- Ample opportunity for advancement based on merit
- Generous transportation & moving allowances

Plus: Employee Benefit and Retirement Plan, Paid Vacations, Holidays, Sick Leave. Blue Cross available

PLEASE WRITE FULLY TO OR INQUIRE AT

SVERDRUP & PARCEL ENGINEERING CO.
1134 LOCUST ST. ST. LOUIS 1, MO.

HIGHWAY AND STRUCTURAL ENGINEERS - DESIGNERS - DRAFTSMEN

Several years' experience in highway or bridge design work preferred but not necessary if educational background is good.

This firm of Consulting Engineers is anxious to employ men who desire long range permanent work, who want to develop as professional engineers and who are eager to accept ever increasing responsibility.

Besides well developed training courses the company offers vacations and holidays with pay, sick leave, blue cross, free life insurance, overtime, moving allowance, and an employee profit sharing plan.

Positions in the above categories available in permanent company offices at Chicago, New York, San Francisco, Oklahoma City, Toronto, Buffalo and Sanford, Florida.

Please reply giving experience record to:

DE LEUW, CATHER & COMPANY
150 NO. WACKER DRIVE *Engineers* **CHICAGO 6, ILLINOIS**

Highway & Bridge Engineers Designers & Draftsmen

Career opportunities for men interested in professional recognition.
Excellent working conditions and employee benefits including liberal retirement program.
Openings in Pennsylvania, Maryland, Florida, Mississippi and overseas.

Air Mail Resume TO R. L. SHAW, Personnel Director

MICHAEL BAKER, Jr., INC.
BAKER BLDG. *Consulting Engineers* **ROCHESTER, PA.**

WATER and SEWER ENGINEERS

DESIGN - CONSTRUCTION - OPERATION - MANAGEMENT

The Philadelphia Water Department is seeking engineers with ability and experience in all phases of work in the operation of a large scale modern water and sewer utility.

You will have opportunity to work on large scale projects and creatively participate in new developments and advanced techniques of operation and management.

We offer full professional recognition and the personal benefits of an important position with a major metropolitan utility.

Mail this ad with your name, address, and area of interest or write directly to

SAMUEL S. BAXTER, *Chief Engineer*
PHILADELPHIA WATER DEPARTMENT,
CITY HALL ANNEX, PHILADELPHIA, PA.

KAISER ALUMINUM

A dynamic leader in the production and sale of aluminum offers an unusual opportunity for personal growth to those who can qualify as

HIGHWAY SALES ENGINEER

Position: To assist in the development of aluminum applications in the highway field and related industries. Will help in maintaining close contact with all major highway construction projects to promote the use of aluminum, provide cost estimates, technical data, design assistance, etc. Involves some travel on national basis to help existing sales force in their contacts with highway accounts.

Qualifications: Requires complete understanding of blueprints and extreme accuracy with figures. Experience as estimator on highway or bridge construction work would be desirable. Must have personal characteristics, initiative, and ability allowing promotion to top management. Age from 25—35. Location: Chicago. College degree or equivalent in experience is essential. Salary commensurate with ability and experience.

Please reply in full, stating age, education, background and experience to:

Personnel Procurement

KAISER ALUMINUM & CHEMICAL SALES, INC.
919 No. Michigan Avenue
Chicago 11, Illinois

STRUCTURAL and MECHANICAL DESIGNERS

Having experience with heavy material handling equipment

Permanent Position For Qualified Men

HOSPITALIZATION
INSURANCE
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Phone or Write
Chief Engineer for Interview

THE WELLMAN ENGINEERING CO.
7000 CENTRAL AVE.
Cleveland 4, Ohio
Telephone EN 1-0842

ENGINEERS CHEMIST

Immediate openings with job security

Assistant Director of Water Bureau. Man with Bachelor's degree plus 10 years experience, 5 of which must be in water supply and distribution. Salary range — $8,550-$10,350.

Associate Engineer with street paving experience. BS degree in engineering essential plus 8 years civil engineering experience or equivalent. $7,770-$9,390 salary range.

Associate Engineer with structural experience. BS degree in engineering and 8 years civil engineering experience or equivalent. Salary range, $7,770-$9,390.

Senior Engineers. Must hold BS degree with 6 years actual experience in field of Civil Engineering or equivalent. Salary range, $6,420-$7,770.

Chemist. BS degree in engineering, physics or chemistry plus 2 years experience in field of practical chemistry. Salary range, $5,350-$6,720.

Apply by letter.

CIVIL SERVICE COMMISSION
242 West Main St., Rochester, N. Y.

STRUCTURAL ENGINEER

For central engineering department of fast-growing Chicago manufacturing firm with large number of plants in U. S. and Canada.

Work being done includes buildings, from small additions to complete new plants, shops, warehouses, offices, and laboratory research facilities. Prefer graduate civil or architectural engineer to handle structural design of steel, concrete, and timber for such buildings. Desirable to have at least three years experience in engineering office with similar duties including checking of structural shop drawings and structural drafting.

Write Personnel Manager,
American-Marietta Company,
101 E. Ontario, Chicago 11, Illinois

CIVIL ENGINEER

Young civil engineer interested in broad application of civil engineering.

Excellent opportunity with consulting firm. Liberal benefit plans and good working conditions. Location Middle West.

Send resume of education and experience with salary requirements to:

P-3223, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

Nationally known New York Consulting Organization is seeking Tax Depreciation Accountant—Engineer

Must be qualified by education and experience with electric and gas utility properties to determine under the applicable rules of taxation:

1. Depreciation allowances based upon estimated useful lives and salvage, measured by:
   (a) Straight line composite method
   (b) Declining balance method
   (c) Sum of the years-digits method
2. Develop and apply mortality curves to mass property accounts as a statistical means of identification of property.
3. Develop statistical studies, such as age-life, to measure reasonableness of reserves for depreciation.
4. Ascertain tax basis (including intangible cost) of property and related depreciation reserves for sales and abandonments.
5. Be able to write clearly and persuasively on depreciation matters.

Individual will be located in N. Y. Salary open.
P-4260, Engineering News Record,
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

STRUCTURAL DRAFTSMEN

FOR HIGHWAY BRIDGE WORK

In New York City and New Jersey

BROWN & BLAUVELT

468 Fourth Avenue, New York City

44 Cooper Street, Woodbury, New Jersey

ENGINEERS

Civil Engineers with or without experience in hydraulics, soils, concrete design, contracts estimating, dams or construction for work on flood control projects in Pennsylvania. Salary to $9000. State experience, salary requirements and references.

P-4228—Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

BLACKTOP MEN NOTICE

Company has 6 plants and is anticipating putting 2 more in West Central New York State. Particularly interested in superintendents and mixer men. Guaranteed year round work.

ASPHALTIC CONCRETE, INC.
P. O. Box 1850 Rochester 3, New York

FIELD ENGINEER FOR TECHNICAL SERVICE AND PROMOTIONAL WORK TO HIGHWAY ENGINEERS

Opportunity for civil engineer over 25 years old. Extensive traveling required, mostly in Minn., Wis., Iowa, Ill. Highway experience preferred.

Car supplied. Travel expenses paid. Starting salary depending upon experience.

Give full background and experience in letter to:

L. D. Dodson, *Manager*
Calcium Chloride Dept.,
WYANDOTTE CHEMICALS CORP.
Wyandotte, Michigan

BECHTEL

AREA ENGINEERS
SENIOR ENGINEERS

Foreign Employment
Saudia Arabia or Sumatra

Field Engineers with refinery or related construction experience.

Office Engineers with heavy industrial construction experience on planning, estimating, costs, material takeoff, scheduling.

No Family Housing

Send resume to:
Manager of Employment & Placement
Industrial Relations Division

BECHTEL
Engineers, Builders for Industry
220 Bush St. San Francisco, Calif.
Recruiting Offices in New York, Los Angeles, San Francisco and Houston

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GRADUATE
CIVIL ENGINEERS or
ARCHITECTURAL ENGINEERS

Major Southwestern general contractor needs engineers for work in estimating dept. Job requires investigation and take off and can also lead to field work depending on interest of employee. Excellent opportunity for young men to obtain desirable position with reliable firm doing all types of construction work. Have openings in El Paso, Dallas, and Los Angeles offices.

ROBERT E. McKEE
GENERAL CONTRACTOR, INC.
PO BOX 562 EL PASO, TEXAS

NEW POSITION
Cincinnati Sewage Disposal
Superintendent

Mill Creek Sewage Works:

Salary range, $7830 to $8613 a year. Supervise plant operation of 129 mgd capacity plant, now under construction. Modified primary treatment, separate sludge digestion with sludge disposal. Must have four years experience in sewage plant operation, engineering degree, be able to qualify for Ohio P. E. and Class "A" operator's license. Management ability essential.

Liberal employment benefits, retirement plan.

Apply before APRIL 1, to:

CIVIL SERVICE COMMISSION
260 CITY HALL
CINCINNATI 2, OHIO

HIGHWAY ENGINEERS
BRIDGE ENGINEERS
SANITARY ENGINEERS
DESIGNERS & DRAFTSMEN

Send Resume to
WIGHT AND COMPANY
Consulting Engineers
1038 Curtiss Street Downers Grove, Illinois

ESTIMATORS
Building
Mechanical

Immediate permanent positions are available in our Cleveland, Ohio office for applicants who have an engineering degree or equivalent in design and/or field experience. In addition must have take-off and pricing experience on all types of industrial and commercial buildings, and/or mechanical installations.

These positions offer an opportunity to become associated with one of the country's foremost industrial engineering and construction companies. In addition to a good starting salary we offer excellent working conditions with paid vacations, sick leave accrual plan, and company-sponsored insurance plan.

All replies will be treated confidential and arrangements will be made to interview selected applicants. Please submit complete resume stating experience, education, salary required and date available to:

P 4183 Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS

Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical, and foundation engineers for interesting work on large dams, powerplants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

HARZA ENGINEERING CO.
400 W. Madison St. Chicago 6, Ill.

CONTROLLER-CPA

Able to step in & take hold of rapidly growing firm, consulting engineers engaged in international and national operations. Fringe Benefits.

SALARY OPEN

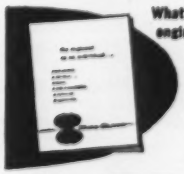
P-4216, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

INTERESTED IN
CREATIVE SALES ENGINEERING
IN THE SANITARY FIELD?

If you're a sales-minded engineer with sanitary experience . . . if you want to practice your profession as a creative individual . . . if challenge, variety and freedom of action appeal to you . . . you'll be interested in the opportunities for sales engineers in Dorr-Oliver.

Specifically, continued growth and expansion have created the need for engineers of varying levels of experience. Academically, B.S. or M.S. degrees in Civil or Chemical Engineering with sanitary option are preferred. Some experience with Federal, State or Local health agencies or in sanitary consulting or sales work is ideal, but not necessarily essential.

If this specification fits you . . . and most important, if you like the concept of the sales engineer as a creative individual, we would like to hear from you. A letter, collect call or wire to E. E. Johnson, our Director of Personnel at Stamford, Connecticut, is all that's needed. We'll do our best to arrange an interview at your convenience.



What do we mean by "creative" engineering? We'd like to send you a copy of "The Engineer as an Individual" . . . a new booklet which describes briefly our concept of the importance of the engineer to our worldwide operations

DORR-OLIVER
INCORPORATED
Barry Place, Stamford, Conn. — Tel. Fireside 8-7311
Worldwide Research — Engineering — Equipment

ENGINEERS WHO ARE "Thinking California"

Immediate assignments in our Los Angeles or San Francisco Divisions.

ELECTRICAL

Engineers, designers, and senior draftsmen with qualifying experience on petroleum refineries, chemical plants, petrochemical plants, central station steam power plants or other related projects.

MECHANICAL

Engineers with qualifying design or project experience on petroleum refineries, petro-chemical plants, chemical plants, central station steam power plants or related projects.

PIPING

Designers and senior draftsmen with qualifying experience on high pressure, high temperature or process piping.

INSTRUMENT

Engineers with qualifying application experience on petroleum refineries, chemical plants, steam power plants or related projects.

Extra Benefits Include
Profit Sharing Trust &
Liberal Insurance Plan

Plus Excellent Relocation Allowances for you and your family

Recruiting offices in:

New York, Houston, Los Angeles, or San Francisco

BECHTEL

Engineers & World-Wide Builders for Industry

220 Bush Street

San Francisco 4, California

ASPHALT ENGINEER

Graduate Engineer with several years in applications for employment in Saudi Arabia. Knowledge of manufacturing helpful. Serve as technical advisor to company, government and road contractors and builders.

Write outlining personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 201

ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE
NEW YORK 22, NEW YORK

PROJECT MANAGERS
PROJECT ENGINEERS

- Structural
- Mechanical
- Electrical

JOB ENGINEERS

A growing demand for our services necessitates expanding our present facilities in Chemical, Refinery and Industrial plant design. Excellent salary & opportunities for permanent positions are available for qualifying applicants including such liberal company benefits as paid holidays, paid vacation, sick benefits, paid life insurance for each employee, paid health & accident insurance for each employee including his family. Ideal working conditions in pleasant surroundings, all in air conditioned offices. For information or consideration send a complete chronological resume including education, previous employers, experience & other qualifications to

WILLIARD INC.

DESIGN & DEVELOPMENT DEPT.
GERMANTOWN AVE. & SEDGLEY ST.
PHILADELPHIA 33, PA.
ATTN: MR. JOHN HALBE, VICE PRES.

STRUCTURAL DESIGNERS

FOR HIGHWAY BRIDGE WORK

SENIORS and JUNIORS

Work in New York City and New Jersey

BROWN & BLAUVELT
468 Fourth Avenue, New York City
44 Cooper Street, Woodbury, New Jersey

DEPARTMENT OF WATER AND SEWERS
CITY OF MIAMI
FLORIDA

CIVIL ENGINEERS:
(Civil Service Positions)
SALARY OPEN

Job Requirements: Design of water supply, distribution, treatment and pumping facilities, sanitary sewers, sewage pumping and sewage treatment.

Education and Experience Requirements: B. S. in Civil or Sanitary Engineering and five (5) years experience in above special fields—or—the equivalent combination of related education and experience in lieu of a degree.

Additional data will be sent to all applicants.

Send complete summary of your education and experience to: Mr. C. F. Wertz, Director, Dept. of Water and Sewers, P. O. Box 316, Miami 33, Florida.

ENGINEERS!

Immediate Career Opportunities!

A MAJOR OIL COMPANY . . .

WANTS—Young (under 30) personable, capable, sales-minded M.E.'s, Ch.E.'s and C.E.'s with management potential. (Servicemen returning to civilian life within 6 months will be fully considered)

OFFERS—good starting salaries, choice of location within U.S., outstanding benefits, interesting and varied assignments (in sales, distribution and engineering), thorough training, regular appraisal, advancement on merit leading to management positions.

WRITE TODAY—with full details on your background, education and experience.

P-3890 Engineering News-Record
Class. Adv. Div. P.O. Box 12, N.Y. 36, N.Y.

3M COMPANY

Structural Design Engineer

Experience in design and stress—strain analysis for structural applications. Work is in the reinforced plastics field applying this exciting new product to structural applications. Man must have imagination and aptitude for creative thinking to develop new applications utilizing reinforced plastics. Please write to—

Technical Employment Department

Minnesota Mining and Manufacturing Company

900 Fauquier Avenue, St. Paul 6, Minnesota

ARCHITECTURAL ENGINEER

Architectural Engineer between ages of 25 and 35 with interest in design of industrial buildings and structures.

Excellent opportunity with consulting engineering firm in Middle West. Liberal benefit plans and good working conditions.

Send resume of education and experience with statement of salary requirements to:

P-3222, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

Civil Engineers

General construction firm expanding both its staff and volume wants civil engineers for permanent positions as field engineers.

Firm operates throughout New York State.

Please give full resume, strictly confidential.

John W. Rouse Construction Corporation
8 Church Street Gouverneur, New York

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

SPECIAL SERVICES

Contract Disputes? Any contractor who has trouble and differences of opinion with Architects or engineers over their contract documents and the processing of a contract are offered my services on a fee basis dependent upon the amount of claim. Thirty-five years experience in operating my own contracting company successfully, which involved many legal disputes, settlements and appeals in court and out of court including arbitration. SS-4097, Engineering News-Record.

Construction Consultant A service to Surety Companies & contractors 30 years construction experience. G.M.C. Lucas, 2225 Wisteria St., Sarasota, Fla., Ringling 7-9843.

BUSINESS OPPORTUNITY

Private Capital Available for financing contracts, building projects, special situations. Inquiries confidential. BO-4259, Engineering News-Record.

WORK WANTED

Prompt service for structural and reinforcing steel detailing by experienced engineers, WW-4237, Engineering News-Record.

Design, Drafting and detailing. All types of buildings and bridges. Professional Engineers. WW-4242, Engineering News-Record.

Engineering group, thoroughly experienced in design and planning of bridges and structures, excellent professional reputation, quality work only, licenses. Interested in affiliation with established firm for excess projects or special studies. WW-4229, Engineering News-Record.

CONTRACT WORK WANTED

Capable Grad. C.E.'s Reg. Surveyors will provide parties and equip. Exp. all types const. CWW-4277, Engineering News-Record.

Bridgeway Associates. Design, contract drawings, specifications for all types of bridges including long span structures. Professional Engineers. CWW-4279, Engineering News-Record.

WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

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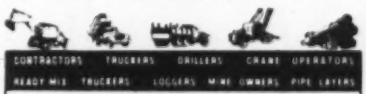

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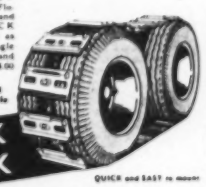
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Editorials

Federal, State or Both?

WATER RESOURCES DEVELOPMENT in the United States is entering a transition period. What seems to be involved is a moving away from the days of major concentration on power, flood control, navigation and irrigation into a period in which domestic and industrial water supply demands will become more controlling. And since such a change in emphasis would require change in water resource development organization, now is the time to think broadly and originally toward this end.

Today the federal government is the dominant influence in water resources construction. But domestic and industrial water supply projects traditionally have been reserved to local agencies. These facts presage profound and far-reaching changes in organization to meet the water resources challenge that now confronts nearly every state in the nation.

A signpost to the new direction is the gradual awakening of the states to their needs. Many are coming to realize that their small water supervisory departments cannot, alone, do the job on the scale required in the future. Some are beginning to move, at least toward the formation of state water resource boards to study the problem and develop master plans. But where do they go from there? How, particularly, is the complicated interaction of local, state and federal interests to be worked out most efficiently?

The state of California already is embarked on one of the many possible variant courses. It has set up its own construction agency to undertake the Feather River project and the remainder of its grandiose $14 billion north-south transmission scheme. And, most significantly, it is looking to the federal government to turn over to it the federal share of resource project costs (for navigation, flood control and irrigation features). This proposal, evidenced by California's Congressional delegation seeking flood control money for Oroville Dam and in a recent policy statement by 50 southern California water agencies, is a striking illustration of the changing emphasis in water resource development and its effect on the existing organizational setup.

If carried out on a wide scale, federal contributions and state construction would mean a considerable contraction of the roles of federal construction agencies, leading perhaps to a setup similar to that in the highway field. In that case it would require establishment of a national water resources agency, staffed in all probability by personnel from the Corps of Engineers and Bureau of Reclamation, and empowered to deal with the states much as the Bureau of Public Roads now does.

But while California's requirements might be met by such an arrangement, less large and affluent states or those less concerned with intrastate waters would have other problems to solve. So, many difficult questions are raised and require answer before a national water policy is fixed.

Is it best to organize water resource development on a state by state basis rather than on a basin-wide basis? Could the states, starting from very little in the way of water personnel, build effective organizations in time to assure an orderly development? Could we afford to dissolve two of the greatest engineering organizations in the world—the Corps and Reclamation? Can the broad objective—reserving development of domestic and industrial water supplies to the states and local agencies—be accomplished in some other manner, such as having the experienced federal agencies act as agents of the states?

The water resources problem of the near future will be every bit as challenging as the current $100 billion highway program. Now is the time to plan on how best to organize to solve it.

Where to Draw the Line

SPOKESMEN FOR A NUMBER OF CITIES throughout the country reportedly are becoming increasingly vocal over the July 31, 1956, cutoff date for federal aid under the sewage plant construction grants program. Feeling penalized because they let contracts just prior to the cutoff date, these cities are threatening various measures that could throw additional obstacles into the path of already complicated machinery for administering the grants program under the 1956 Water Pollution Control Act.

Critics of the cutoff date would do well to examine carefully some of the reasons for the limitation. A line had to be drawn somewhere, obviously. Whether an earlier or a later date had been fixed, there would have been some cities with projects already under way which could not have qualified for a grant. Moreover, since the intent of the grants program is to stimulate the building of new sewage treatment facilities, it appears reasonable not to pick up previously let contracts. Cities having contracts under way need no more stimulation, and it is hardly likely that they are in dire financial straits because of the contracts.

Also, it becomes an extremely difficult matter, legally and administratively, to include work let before July 31 in the program. If it be any comfort, cities in this position can philosophize that at the start of a program of this type there are almost always injustices of one sort or another. And what may look to be an injustice now may turn out to be a blessing. For example, those who have already let contracts are protected from rising costs, while their neighbors who procrastinated and are now eligible for federal aid may find it does not even cover the cost rise.

The city of Frankfort, Ky., an early starter, had been bemoaning loss of a $250,000 federal grant until a brokerage firm advised that the early start had saved $430,000 in interest charges due to rising interest rates. Here, indeed, was a silver lining.

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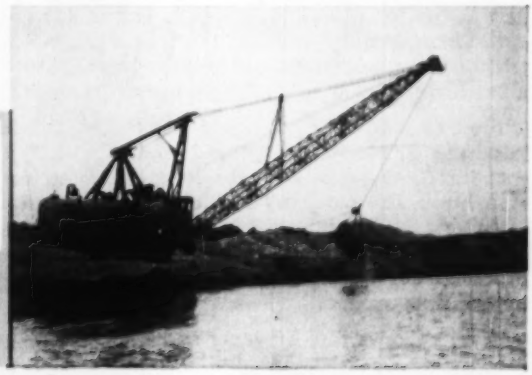

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